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HOW CAN READING BE TAUGHT TO EDUCABLE ADOLESCENTS WHO HAVE NOT LEARNED TO READ.
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A READING PROGRAM WAS STUDIED AND TESTED FOR MENTALLY RETARDED ADOLESCENTS WHO READ SIGNIFICANTLY BELOW EXPECTANCY. THIS REPORT REFLECTS AN ORIGINAL ATTEMPT TO DEVELOP AN EXPERIMENTAL PROGRAM ONLY FOR THOSE EDUCABLES WHO HAVE NOT LEARNED TO READ. THIS PLAN WAS DISCONTINUED WHEN PRELIMINARY SCREENING REVEALED ONLY A FEW NONREADERS AMONG THE COMMUNITY AREAS CHOSEN FOR THE STUDY. THE INVESTIGATION COVERED THE FOLLOWING AREAS--(1) AN INVESTIGATION OF BACKGROUND FACTORS RELATING TO READING ACHIEVEMENT, (2) AN INQUIRY INTO LEVELS OF READING EXPECTANCY FOR EDUCABLES, INCLUDING THE KINDS AND AMOUNT OF READING WHICH MIGHT BE NEEDED, AND (3) AN EXPERIMENT WITH READING METHODS, MATERIALS, AND PROCEDURES. THE PROGRAM EMPHASIZED READING THROUGH THE EXPERIENCE-METHOD APPROACH WHICH MAKES USE OF INDIVIDUAL INTERESTS AND EXPERIENCES IN PRACTICAL AND MEANINGFUL WAYS THROUGHOUT THE SCHOOL DAY. TRADITIONAL AND SEMI-EXPERIENCE APPROACHES WERE ALSO USED TO MAKE A COMPARATIVE STUDY. PROGRAM RESULTS GAVE EVIDENCE THAT EDUCABLES ARE CAPABLE OF HIGHER ACHIEVEMENT WHEN APPROPRIATE EMPHASIS IS PLACED ON A SPECIFIC ACADEMIC AREA SUCH AS READING. IT WAS THE EMPHASIS ITSELF THAT SEEMED IMPORTANT TO READING PROGRESS, NOT THE PARTICULAR METHODS THROUGH WHICH EMPHASIS WAS APPLIED. (JH)

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HOW CAN READING BE TAUGHT TO EDUCABLE ADOLESCENTS WHO HAVE NOT LEARNED TO READ?

Ruth C. Boyle, Ed. D.

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TABLE OF CONTENTS

PAGE

DEDICATION.. ii

ACKNOWLEDGEMENTS.................................. iii

LIST OF TABLES.................................... viii

LIST OF FIGURES................................... xii

Chapter

I INTRODUCTION..................................... 1

Statement of the Problem.................. 2
The Original Plan of the Experiment.. 3
Revised Experimental Plan............ 3
Experiment on Reading Progress.. 4
Inquiry into Levels of Reading Expectancy.................. 6
Investigation of Background Factors in Reading........... 6
Summary and Questions..................... 7
Questions on Reading Progress........ 7
Questions on Levels of Reading Expectancy....................... 8
Questions on Reading Achievement..... 9

II PROCEDURES...................................... 11

Subjects.................................. 11
Experience, Semi-Experience and Traditional Groups.......................... 12
Original Groups...................... 12
Reclassification of Teachers......... 14
Reclassified Groups.................. 15
Emphasis and Non-Emphasis............ 16
Reading Test Procedures................... 17
Other Test Procedures..................... 19
The Lorge-Thorndike Test............. 20
The House-Tree-Person Test........... 20
Interviews................................ 21
Pupil Interest Interview............. 22
Speech Survey and Family Information Interview...................... 22

Chapter PAGE

Questionnaires and Written Records........ 23
  Teacher Records on Reading Activities 23
  Teacher Estimates of Reading Level... 24
Data from Records........................ 24
  Cumulative Record and Medical Data... 24
  Teacher Training and Experience Data. 25

III RESULTS.................................... 26

  Experimental Reading Program......... 26
  Investigations of Levels of Expectancy........................ 26
  Comparative Study of High and Low Achievers........................ 27
Experimental Reading Program.............. 27
  Progress of the Total Group.......... 27
  Progress According to Method......... 31
  Progress in Relation to Background Factors........................... 38
    Physical Factors................. 38
    Intellectual Factors............. 45
    Familial Factors................. 52
    Educational Factors.............. 52
    Teacher Characteristics.......... 56
    Community Differences............ 64
Investigations of Levels of Expectancy.... 69
  Sex Differences...................... 69
  Measures of Expectancy............... 71
    Mental Age....................... 71
    Horn Index....................... 77
Comparative Study of High and Low Achievers............................... 82
  Progress and Achievement............. 82
  Background Factors................... 85
    Physical Factors................. 85
    Intellectual Factors............. 87
    Familial Factors................. 89
    Educational Factors.............. 90
    Attitudes Toward Reading......... 92
    Vocational Choice................ 94

IV SUMMARY AND DISCUSSION.................... 96

Summary of the Experiment................. 96
  Findings Related to Progress in Reading............................ 99
    Progress and Emphasis............ 99
    Progress and Method.............. 99
    Further Analysis of Progress Results........................ 100

Chapter PAGE

Findings Related to Expectancy....... 101
Mental Age Expectancy........... 101
Horn Index Expectancy........... 103
Evaluation of Achievement....... 103
Sex Differences................ 105
Findings Related to Background Factors.......................... 106
Background Factors and Progress. 106
Background Factors and Achievement.................. 107
Highlights of the Findings................. 109
Implications.............................. 112

BIBLIOGRAPHY................................. 117

References............................... 118
Additional Bibliography.................. 120

Appendices

A DISTRIBUTION OF READING GRADES ON PRELIMINARY SCREENING TEST.................................. 122

B DIRECTIONS FOR ADMINISTERING H-T-P........... 124

C PUPIL INTEREST INTERVIEW...................... 127

D TEACHER INTERVIEW............................ 134

E SPEECH SURVEY FORM........................... 136

F FAMILY INFORMATION INTERVIEW................. 138

G DAILY RECORD OF READING ACTIVITIES........... 141

H ANECDOTAL RECORD OF REACTIONS TO READING EXPERIENCES................................ 144

I SUMMARY OF SUCCESSFUL AND UNSUCCESSFUL METHODS AND TECHNIQUES IN TEACHING READING.......... 147

J CUMULATIVE RECORD AND MEDICAL DATA FORM........ 158

K TEACHER TRAINING AND EXPERIENCE DATA FORM...... 160

L DISTRIBUTION OF CHRONOLOGICAL AGES, IQ'S, MENTAL AGES AND READING GRADES AMONG THE EXPERIENCE, SEMI-EXPERIENCE AND TRADITIONAL GROUPS...... 163

M DISTRIBUTION OF READING SCORES IN RELATION TO EXPECTANCY MEASURED BY MENTAL AGE AND HORN INDEX.................................... 169

LIST OF TABLES

TABLE PAGE

1 Distribution of Reading Grades on Preliminary Screening Test.................................... 123

2 Population During the Two Periods of the Reading Experiment According to Sex and Community........... 12

3 Summary of Changes in Experimental Group Status..... 15

4 Population as Reclassified into Three Groups: Experience, Semi-Experience and Traditional During the Two Periods of the Experiment.................. 16

5 Shifts in Membership of Reading Classes Due to September 1958 Reorganization of Classes............ 19

6 Comparison of Growth in Reading by Sex Between Study Group and Non-Study Group From January 1958 to January 1959..................................... 30

7 Comparison of Reading Grade Level by Sex Between Study Group and Non-Study Group............ 31

8 Analysis of Progress in Reading from January 1958 to January 1959 for Experience, Semi-Experience and Traditional Reading Groups......................... 32

9 Analysis of Progress in Reading from January 1958 to June 1958 for Experience, Semi-Experience and Traditional Reading Groups......................... 33

10 Analysis of Progress in Reading from June 1958 to September 1958 for Experience, Semi-Experience and Traditional Reading Groups......................... 34

11 Analysis of Progress in Reading from September 1958 to January 1959 for Experience, Semi-Experience and Traditional Reading Groups........................ 35

12 Analysis of Reading Progress from January 1958 to June 1958 by Individual Classes According to Type of Reading Progrsm................................ 37

13 Median Progress in Months by Age and Sex from January 1958 to January 1959.................. 39

14 Progress in Reading by Sex from January 1958 to June 1958................................... 40

TABLE PAGE

15 Progress in Reading by Sex and Race from January 1958 to January 1959.................... 41

16 Progress in Reading by Sex and Handedness from January 1958 to January 1959.................... 43

17 Progress in Reading by Sex and Speech Defect from January 1958 to January 1959.................... 44

18 Median Reading Progress in Months in Relation to Stanford-Binet IQ from January 1958 to January 1959.. 46

19 Median Reading Progress in Months in Relation to Stanford-Binet Mental Age from January 1958 to January 1959.................................... 47

20 Median Reading Progress in Months in Relation to Lorge-Thorndike Nonverbal IQ from January 1958 January 1959.................................... 48

21 Median Reading Progress in Months in Relation to the Difference Between Raw G and Net Weighted IQ's on the H-T-P from January 1958 to January 1959....... 50

22 Median Reading Progress in Months in Relation to the Difference of Good and Flaw IQ's on H-T-P from January 1958 to January 1959.................... 51

23 Median Reading Progress in Months in Relation to Siblings in the Family from January 1958 to January 1959.................................... 53

24 Median Reading Progress in Months in Relation to Position in the Family from January 1958 to January 1959.................................... 54

25 Median Reading Progress in Months in Relation to Parents in the Home from January 1958 to January 1959 55

26 Progress in Reading of Children Who Remained in Same Class, Transferred to Another Special Class, or Transferred to Regular Class from September 1958 to January 1959................................ 57

27 Median Reading Progress in Months in Relation to Years of Teaching Experience, Types of Certification, and Number of Reading Courses from January 1958 to January 1959.................................... 59

28 Progress in Reading in Relation to Difference Between Teacher Estimates of Boys' Reading Level in January 1958 and June 1958............................ 62

TABLE PAGE

29 Progress in Reading in Relation to Difference Between Teacher Estimates of Girls' Reading Level in January 1958 and June 1958.................................. 63

30 Progress in Reading in Communities A and B from January 1958 to January 1959........................... 65

31 Reading Achievement Grades in Communities A and B in January 1958..................................... 67

32 Reading Achievement Grades in Communities A and B in January 1959..................................... 68

33 Distribution of Reading Achievement Scores by Sex in January 1958 and January 1959...................... 70

34 Means, Standard Deviations and Standard Errors of the Means of Mental Age Reading Expectancy Grades in January 1958 and January 1959...................... 72

35 Means, Standard Deviations and Standard Errors of the Means of Reading Achievement Grades in January 1958 and January 1959................................ 73

36 Pearson Product-Moment Correlation Co-efficients Between Mental Age Reading Expectancy Grades and Reading Achievement Grades, and the Significance of the Difference Between the Correlations Obtained in January 1958 and January 1959...................... 74

37 Pearson Product-Moment Correlation Co-efficients and Correlation Ratios Between Mental Age Reading Expectancy Grades and Reading Achievement Grades, and F Tests of Linearity of Regression for January 1958 and January 1959........................ 77

38 Means, Standard Deviations and Standard Errors of the Means of Horn Reading Expectancy Grades in January 1958 and January 1959........................ 79

39 Pearson Product-Moment Correlation Co-efficients Between Horn Reading Expectancy Grades and Reading Achievement Grades, and the Significance of the Difference Between the Correlations Obtained in January 1958 and January 1959........................ 80

40 Pearson Product-Moment Correlation Co-efficients and Correlation Ratios Between Horn Reading Expectancy Grades and Reading Achievement Grades, and F Tests of Linearity of Regression for January 1958 and January 1959..................................... 81

TABLE		PAGE
41	Comparison of Median Reading Progress in Months Between High and Low Achievers During Four Time Intervals	83
42	Age, Race, Handedness, and Speech Defects of High and Low Achievers in Reading	86
43	Median IQ's on Stanford-Binet, Lorge-Thorndike and H-T-P, and Median Differences of H-T-P Scores of High and Low Achievers in Reading	88
44	Familial Factors of High and Low Achievers in Reading	90
45	Educational Factors of High and Low Achievers in Reading	91
46	Attitudes Toward Reading Among High and Low Achievers in Reading	92
47	Realistic and Unrealistic Vocational Choices of High and Low Achievers in Reading	95
48	Distribution of Chronological Ages Among the Experience, Semi-Experience and Traditional Groups in January 1958	164
49	Distribution of Stanford-Binet IQ's Among the Experience, Semi-Experience and Traditional Groups in January 1958	165
50	Distribution of Mental Age Scores on the Stanford-Binet Among the Experience, Semi-Experience and Traditional Groups in January 1958	166
51	Distribution of Reading Grades Among the Experience, Semi-Experience and Traditional Groups in January 1958	167
52	Distribution of Reading Grades Among the Experience, Semi-Experience and Traditional Groups in January 1959	168
53	Distribution of Reading Scores in Relation to Expectancy Measured by Mental Age and Horn Index in January 1958	170

LIST OF FIGURES

FIGURE		PAGE
1	Median Reading Achievement in January 1958 Compared with Mental Age Reading Expectancy....	75
2	Median Reading Achievement in January 1959 Compared with Mental Age Reading Expectancy....	76

CHAPTER I

INTRODUCTION

Most of the assumptions about the reading of the mentally retarded rest on untested theoretical ideas or on generalizations from findings based on normal children. Scientific inquiry into the validity of these assumptions is relatively non-existent, and the currently expanding program of research into mental retardation has paid only incidental attention to this problem.

While specific research on reading is lacking, there is a trend toward investigating "qualitative" learning characteristics of retardates having considerable relevance to the reading of this group. As yet, investigators have produced no general principles to guide educators concerned with teaching retardates to read; however, their work shows promise of scientific evidence which should be meaningful in evaluating present assumptions on the reading of the retarded. For example, inquiries into differences between normal and retarded children include the following characteristics related to reading: verbal learning ability (Cassell, 1957), learning of novel tasks (Wilson, 1928), rote learning and transfer and the discovery and application of an underlying principle (Cruickshank and Blake, 1957).

This theoretical research has important implications for understanding the reading problems of the mentally retarded, but it does not replace or eliminate the need for an empirical program of research specifically concerned with their reading. Such a program of research would assist educators with the practical problems of reading readiness and expectancy, specialized techniques of teaching reading, and appropriate materials for this group of children.

Statement of the Problem

As a pioneer venture into the area of reading of mental retardates, this project was concerned with three general problems involving the reading of educable mentally retarded adolescents:[1] (1) the effect on reading progress of an experimental program which stressed reading, (2) an inquiry into levels of expectancy in reading, and (3) the effect of background factors on reading progress and achievement.

Educables in the adolescent period were chosen for study for several reasons. First, educables are considered capable of achieving moderate degrees of proficiency in basic learning skills, and many of these educables reach in adolescence the verbal and symbolic development considered important for beginning reading instruction, according to the criterion mental age of six to six and a half years specified by such reading authorities as Betts (1936), Gates (1950), Harrison (1936), Kirk (1940) and Robinson (1946). Second, it was felt that the experiences of these educables have broadened by this point in their lives to include social and vocational motivations for reading that were not present earlier. And third, since many of these pupils leave school upon reaching age 16,[1] a renewed effort to teach them reading in adolescence represents their last chance for such instruction in most cases.

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[1] According to Chapter 178, P.L. 1954, enacted in the State of New Jersey, educable mentally retarded pupils are identified by the IQ range of approximately 50 to 75 for placement in special classes for the educable retarded. Hereafter, these pupils will be referred to as educables in most instances.

The Original Plan of the Experiment

The project was originally designed as an experiment in teaching reading to educables who had not learned to read. A fresh start in teaching these non-readers was planned in an experimental program to stress reading with the use of methods and materials specially chosen for their needs and abilities. It was intended to compare the reading progress of the experimental group to that of a control group of non-readers who would not receive emphasis on reading.

A change in the plan of the experiment came about when preliminary screening revealed only a few non-readers among the 409 educables in the two communities chosen for the study.[2] Thus, the hypothetical expectancy of a sizeable group of non-readers among educable adolescents according to the criterion of mental age was clearly not borne out.[3] An experiment with non-readers was clearly unfeasible.

Revised Experimental Plan

After the experiment with non-readers was abandoned, attention was turned to questions of reading progress and achievement which were stimulated by the wide range of reading scores--between grades 0.0 and 6.9--occurring on preliminary testing. It was felt that the same reasons favoring the reading readiness of non-reading educables applied to the readiness for more reading instruction of educables who could read, either poorly or relatively well. Therefore, an experiment in reading progress was set up to explore whether educables who received renewed emphasis on reading during adolescence would show significant progress in reading. The investigation of background factors of possible effect on reading progress and achievement was suggested by the wide differences in reading achievement occurring on initial testing. The inquiry into levels of expectancy in reading for educables was corollary to both the experiment on progress and the study of achievement.

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[1] New Jersey State Law requires compulsory education up to age 16.

[2] Both communities participating in the study were large industrial cities in the State of New Jersey.

[3] Table 1 in Appendix A shows the distribution of reading scores on the preliminary testing occasion.

Experiment on Reading Progress. In exploring the effects of renewed emphasis on reading upon the reading progress of educable adolescents, two questions guided the investigation. First, the general question was asked whether emphasis on reading would result in significant progress in reading. Second, progress was studied from the standpoint of method with the question whether emphasis on reading in an experience program would result in greater progress than emphasis in a traditional program of reading instruction.

In exploring the general question of progress, without reference to method, the progress of the group as a whole was studied in relation to a hypothetical expectancy of progress derived from the expectancy of normal children's progress. The progress of the total group also was considered in relation to the progress of a non-study group of educables who had not received emphasis on reading.

The question of progress in relation to method was studied by a comparison of two groups of pupils within the total population who were taught by the widely differing methods of an experience program and a traditional program of reading instruction, respectively. These two reading methods represent opposite ends of a continuum in the teaching of reading as a functional skill through the experience method, and as a formal exercise through the traditional method. The contrasts between these two methods of teaching reading have been fully described by Hildreth (1936, pp. 110-121) in her description of the "newer tendencies in modern reading instruction."

An evaluation of these two ways of teaching reading suggested that reading emphasis in an experience program would result in greater progress than emphasis in a traditional program of reading instruction."

An evaluation of these two ways of teaching reading suggested that reading emphasis in an experience program would result in greater progress than emphasis in a traditional program of reading instruction. By its nature and aims the experience program seems more suitable for this group of pupils. According to this approach, reading permeates much of the school day. In addition to a basal reader, short activity units based on the particular interests and needs of the pupil are developed, and reading is introduced as a means of communicating ideas concerning these experiences and of relating the concepts obtained from reading to life experiences. By contrast, reading in a traditional approach follows the lines of the basal reader, is taught as a "lesson" during a special period, and is not integrated into other class activities. Thus, experience techniques seem more consistent with the principle generally accepted by psychologists that learning is most apt to take place when it is meaningful and can be related directly to personal experience. The direct correlation of classroom activities to general life activities on the concrete level of experience would seem to be particularly suitable for this group of pupils who do not think readily in abstract terms. The goal-directed nature of experience activities would seem to be particularly appropriate for them, also, since they will be leaving school soon to face realistic vocational and social problems.

Inquiry into Levels of Reading Expectancy. As the study progressed, the adequacy of current measures of expectancy in reading for educables became another important consideration. A valid measure of expectancy is important in evaluating reading achievement and progress, both in research and in the classroom, since each pupil's achievement and progress is relative to the reading level that could be expected of him. Two widely used measures of educational expectancy were applied to the data, namely, mental age which is the basis accepted by most authorities (Kirk, 1940; Gray, 1955; and French, 1957) and the Horn Index which takes into account chronological age as well as mental age (Horn, 1940). The results from the use of both these measures were examined in relation to sex differences and to the general problem of a realistic measure of reading expectancy for educables.

Investigation of Background Factors in Reading. An important part of the study was the investigation of background factors which could contribute to both reading achievement and reading progress. For present purposes, achievement refers to the reading level established at the beginning of the experiment on reading progress, and progress refers to the difference between this level and the reading level attained at the end of the experiment. Included among the various background factors that were measured against reading progress and achievement were specific physical, intellectual, familial, educational and other characteristics.

The relationship between reading progress and background factors was investigated on the basis of the total population; in exploring questions of background factors in relation to achievement, the upper 10 per cent of the group according to reading level and IQ was compared to the lower 10 per cent of the group. These two achievement groups were also compared on the basis of progress made during the reading experiment.

Summary and Questions

This project investigated three major areas of the reading of educable adolescents: (1) the experimental study of reading progress, including a comparison of methods and the investigation of background factors considered relevant to reading progress, (2) an inquiry into levels of reading expectancy for educables, and (3) the investigation of background factors in relation to reading achievement.

Questions on Reading Progress

I. Do educables who receive renewed emphasis on reading during adolescence show significant progress in reading?

II. Does emphasis in an experience program result in greater progress by educables than emphasis in a traditional program of reading instruction?

III. What background factors affect progress in reading?

- A. Physical Factors
    1. age
    2. sex
    3. race
    4. handedness
    5. speech
- B. Intellectual Factors
    1. Stanford-Binet scores
    2. Lorge-Thorndike Nonverbal score
    3. House-Tree-Person scores
- C. Familial Factors
    1. number of siblings
    2. position in family
    3. parents in home
- D. Educational Factors
    1. entrance into regular class during the project
    2. change to another special class during the project
- E. Teacher Characteristics
    1. teaching experience and training
    2. satisfaction in teaching educables
    3. teacher estimate of reading level
- F. Community differences

Questions on Levels of Reading Expectancy

I. Is mental age an adequate measure of reading expectancy for educables?

II. Is the Horn Index an adequate measure of reading expectancy for educables?

Questions on Reading Achievement

I. Do high achievers differ from low achievers in reading progress during the study?

II. What background factors distinguish between high and low achievers in reading?

- A. Physical Factors
    1. Age
    2. sex
    3. race
    4. handedness
    5. speech
- B. Intellectual Factors
    1. Stanford-Binet scores
    2. Lorge-Thorndike Nonverbal score
    3. House-Tree-Person scores
- C. Familial Factors
    1. Number of siblings
    2. position in family
    3. parents in home
- D. Educational Factors
    1. age of entrance into special class
    2. number of years in special class
    3. regular grade last attended

E. Attitudes toward Reading

    1. interest in reading

    2. self-evaluation of reading

F. Vocational Choice

    1. realisticness of choice

    2. consistency of choice

CHAPTER II

PROCEDURES

An important consideration in the choice of a locale for the study was the availability of special classes for educable adolescents. A sufficient number of these classes was available only in the larger cities. Two large cities which were comparable in size and in industrial emphasis were chosen as the source of the population. The particular schools chosen were located in low socio-economic neighborhoods, since few, if any, special classes for educable adolescents existed in the more prosperous sections of these cities. For the purposes of this study these cities will be referred to as Community A and Community B.

Subjects

As a preliminary screening device in the selection of subjects, the California Reading Test, Primary Form AA and BB, was administered in groups to the total population of educable adolescents in Communities A and B. Additional data obtained from school records about each pupil permitted a statistical analysis to determine classes which were comparable in chronological age, mental age and race. Only those pupils within the age range of 12 to 15 were included in order to insure their participation for the year's duration of the experiment, since the State of New Jersey requires compulsory education only up to age 16. The IQ range[1] was established at 50 to 79, the range usually found in special classes for educables. so that the subjects would have a mental age of at least six years, which is the level of readiness for current first grade programs of instruction. From these screening procedures a study population consisting of 162 pupils in 15 classes was established at the beginning of the experiment in January 1958; there were 95 boys and 67 girls. During the second half of the experiment seven girls withdrew from school and were therefore unavailable to the study. Thus, for the period June 1958 to January 1959 the population was reduced to 155 pupils. The population during these two periods according to sex and community is shown in Table 2.

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[1] In all but five cases the IQ score was based on the Stanford-Binet Intelligence Test for Children; there were five IQ's based on the Wechsler Intelligence Scale for Children.

Table 2

Population During the Two Periods

of the Reading Experiment

According to Sex and Community

PERIOD	COMMUNITY A		COMMUNITY B		BOTH COMMUNITIES	
	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
January '58 to June '58	32	30	63	37	95	67
June '58 to January '59	32	26	63	34	95	60

Experience, Semi-Experience and Traditional Groups

Original Groups

At the beginning of the experiment, it was planned to study reading progress by a comparison of two groups: (1) an Experience Group, consisting of pupils in classes which *received renewed emphasis* on reading in an experience program and (2) a Traditional Group,consisting of pupils in classes which *did not receive renewed emphasis* on reading and were taught in a trditional program of reading instruction. In order to avoid the contamination of experimental conditions which could arise from the proximity of Experience and Traditional classes within the same school, all the classes in a particular school were assigned to the same experimental group, i.e., either Experience *or* Traditional. In making these assignments attention was paid to the likelihood that the participating teachers in a particular school would implement either an experience or a traditional program of reading instruction. The total of 15 classes in the study was assigned as follows: there were five Experience classes in each of Communities A and B; and there were five Traditional classes in Community B.

Prior to testing, the teachers of Experience and Traditional classes met as two separate groups with the Project Director for their orientation to the study. Both groups of teachers were acquainted with the major purpose of the project as an experiment in the reading progress of educables. The Experience teachers, the "emphasis" teachers, received a more extensive explanation of the study in a day-long meeting which encompassed also instruction in the philosophy and methods of the experience approach and a description of the learning characteristics of educables and adolescents in general, as these characteristics relate to the experience approach. During the experiment these teachers met with the Project Director in individual conferences at regular intervals of approximately 10 days for consultation about their use of experience methods. The teachers of the Traditional classes met for a less extensive orientation during which they were instructed to continue to teach reading according to their usual methods. No instruction was given about the experience approach or about the learning characteristics of educable adolescents, and during the study they did not consult with the Project Director about their work. A requirement common to both groups of teachers was the maintenance of the same written records about reading activities. (See Appendixes G and H for sample forms of these records.)

Reclassification of Teachers

As the study progressed, it became apparent that a clear difference between Experience and Traditional Groups as they were set up did not exist. Despite care taken to assign Experience and Traditional status to teachers most likely to function in these roles, it was discovered that some of the teachers in each group failed to follow through as expected. In other words, some of the Experience teachers did not successfully implement an experience program, or were only partially successful in doing so; while some of the Traditional teachers were actually experiential in their approach, or partially successful in using the experience method. A re-evaluation of the teachers was undertaken therefore at the end of the experiment on the basis of the extent to which they used the experience method. As a result, it was found that the teachers could be reclassified into three groups; those who successfully followed through on an experience program of teaching reading, those who were partially successful in teaching reading by experience methods, and those who used traditional methods of teaching reading.

Reclassified Groups

Following this re-evaluation of the teachers, it was decided to reclassify the population into three groups to accord with the teachers' emphasis on reading through an experience program. As a result of this reclassification, the Experience Group now consisted of pupils in six classes which were taught with emphasis on reading in an experience program. Their teachers had introduced reading as an integral part of their other class activities. A newly created Semi-Experience Group consisted of pupils in three classes which were taught reading through a less intensive experience program. This new group included some pupils from both formerly Experience and Traditional classes. The Traditional Group consisted of pupils in six classes which were taught by traditional methods of reading instruction. A summary of the changes in experimental group status is presented in Table 3. The reclassification of the population into these three groups during the two periods of the experiment is shown in Table 4.

Table 3

Summary of Changes

in Experimental Group Status

N = 162

GROUPS	ORIGINALLY EXPERIENCE		ORIGINALLY TRADITIONAL	
	NO.CLASSES	NO.SUBJECTS	NO.CLASSES	NO.SUBJECTS
Experience	4	46	2	17
Semi-Experience	2	25	1	7
Traditional	3	33	3	34

Table 4

Population as Reclassified into Three Groups: Experience, Semi-Experience and Traditional During the Two Periods of the Experiment

PERIOD	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL	
	BOYS	GIRLS	BOYS	GIRLS	BOYS	GIRLS
January '58 to June '58	24	39	27	5	44	23
June '58 to January '59	24	36	27	5	44	19

Emphasis and Non-Emphasis

The original distinction between Experience and Traditional Classes on the basis of emphasis and non-emphasis on reading, respectively, was obliterated by the reclassification of the population. Thus, each group now represented a mixture of Experience and Traditional experimental procedures. In the Experience Group, two teachers had operated under Traditional conditions as far as their orientation to the study and their opportunity for consultation with the Project Director about their work. In the Traditional Group, three teachers had had the orientation and supervision given to the Experience teachers. In the Semi-Experience Group, two teachers had functioned under Experience procedures, and one teacher had functioned under Traditional procedures. The teachers in all groups, however, had two important experimental conditions in common: an acquaintance with the purpose of the project and the maintenance of written records.

This heterogeneity of experimental conditions became relatively unimportant as a problem in experimental design when the teachers were further re-evaluated on their reaction to the experiment. Then it became apparent that the fact of participation in the project had produced in effect a condition of reading emphasis in all the classes. Thus, instead of two groups which represented emphasis and non-emphasis on reading, the group as a whole was considered to reflect emphasis on reading; and inquiry was made into possible differences in progress among the three groups (Experience, Semi-Experience and Traditional) as reflecting the effect of differences of method.

Reading Test Procedures

The California Reading Test, Upper Primary, was selected as the measure of reading progress and achievement for two main reasons. First, its relatively narrow range of grade levels (grades three and lower four) permits greater discrimination among very low readers as compared to other reading tests considered. Second, the opportunity for some success for even the poorest reader makes it more suitable for use with a group likely to have a low frustration tolerance for a reading test

Two forms of the test were administered alternately at intervals over the period of a year. Form W was used on the first testing occasion in January 1958. First retesting on Form X occurred in June 1958 to obtain a measure of progress during the first six months of the study. The second retest was given in September 1958 using Form W to obtain a measure of possible change during the summer vacation period when no formal reading instruction was given. Final retesting with Form X took place in January 1959 to obtain a long term indication of progress in light of the year's experience. Thus, there were three measures of reading progress during the experiment.

Those pupils who had achieved a reading grade of 3.5 or better on each testing occasion were also given Elementary Forms X or W of this test on the subsequent retesting period. This procedure was adopted in order to obtain a more valid indication of the grade level of the higher achievers, since the elementary form of this test includes material involving the higher skills of grades four, five and six. Reading progress for these higher achievers was therefore measured on the basis of elementary test scores.

The plan of the experiment was to compare the reading progress of the entire population under experimental conditions over the period of a year. Care had been taken to minimize and avoid changes in the population which would alter the composition or status of the experimental groups. Despite these precautions, however, more than half of the population was shifted in the September reorganization of classes which occurred mid-way during the experiment. As a result of these changes, the experimental conditions prevailed for only 71 subjects of which 34 were in the Experience Group, 19 in the Semi-Experience Group, and 18 in the Traditional Group. The year's progress for those subjects who did not fulfill the experimental conditions was examined in relation to the group remaining intact and in accordance with the kind of change that took place. In addition, progress over the year for the entire population was studied on an individual class basis. Table 5 summarizes the changes taking place due to the September reorganization of classes.

Table 5

Shifts in Membership of Reading Classes

Due to September 1958 Reorganization of Classes

N = 162

SEPT. '58 CLASSIFICATION	ORIGINAL CLASSIFICATION			SEPT. '58 TOTALS
	EXPERIENCE	SEMI-EXPERIENCE	TRADITIONAL	
Experience	34	0	0	34
Semi-Experience	0	19	0	19
Traditional	13	5	18	36
Special Class	7	7	24	38
Regular Class	7	1	22	30
Withdrew	2	0	3	5
N	63	32	67	162

Other Test Procedures

A nonverbal estimate of intelligence was desired to supplement the measure of intelligence already available from the Stanford-Binet, which is heavily weighted in the verbal area. Since these retarded subjects find general difficulty in verbalization, it was felt that both progress and achievement should be studied in relation to some nonverbal measure of their intellectual capacity in addition to the Stanford-Binet. Two nonverbal tests of intelligence were administered: The Nonverbal Battery of The Lorge-Thorndike Intelligence Test, Level

Three, and The House-Tree-Person Projective Technique.[1] These particular instruments were chosen from among the various tests considered as most suitable for the reading level of these subjects and for the condition of large scale administration. Neither test requires the subject to read test items, and both can be administered on a group basis. The Lorge-Thorndike has the special advantages of being specifically designed to measure mental ability on a nonverbal basis and of correlating satisfactorily with other group tests of mental ability.[2] The particular usefulness of the H-T-P lay in its provision of a measure of mental efficiency of achievement in relation to capacity which is based on qualitative as well as quantitative data.

The Lorge-Thorndike Test

The Lorge-Thorndike was administered in accordance with the instructions in the test manual. Since a thorough understanding of the instructions was essential for correct procedure on the test, at least two proctors were present at the testing sessions to ensure that each child was correctly oriented toward the test. The test yielded quantitative nonverbal measures of intelligence for each pupil.

The House-Tree-Person Test

The H-T-P test was given in small groups consisting of five to 15 pupils. Both achromatic and chromatic drawings were obtained successively and in that order, following the usual instructions delivered to the group by a proctor. A post drawing interrogation on an abbreviated form of the H-T-P Children's Revision-Post-Drawing Form (Buck, 1950) was conducted by proctors who questioned each pupil individually on the basis of the achromatic drawings as soon as they had completed both sets of drawings. Two experts skilled in the use of this instrument analyzed the drawings to obtain four nonverbal measures of intelligence: Raw Grade, Net Weighted, Good and Flaw. (Appendix B is a copy of the DIRECTIONS FOR ADMINISTERING H-T-P.)

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[1] Hereafter these tests will be referred to as the Lorge-Thorndike and the H-T-P tests.

[2] According to the Technical Manual for this test, the Nonverbal Battery correlates .65, .71, and .74 with three other well-known group tests of intelligence.

Interviews

Pupil Interest Interview

A structured interest interview was devised originally to obtain information about attitudes and motivations of the study population as a guide to setting up procedures. Several forms of the questionnaire were tried out and revised using a comparable sample of educable adolescents in a neighboring community.[1] The final instrument was then administered to a random sample of subjects. Included among the 57 questions in the interview were a number of inquiries into interest in reading and self-evaluation of reading ability. Therefore, all the high and low achievers in reading were administered this interest interview; and those questions having to do with interest and self-evaluation of reading ability were related to reading achievement in a comparison of high and low achievers. (Appendix C is a copy of the questions used in the Pupil Interest Interview.)

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[1] A sample of 10 pupils in special classes for educable adolescents in Bloomfield, New Jersey, comprised the try-out group.

Teacher Interview

In order to obtain information about the attitudes of the teachers toward the experiment and toward special classes for the retarded, an interview schedule was developed and administered to all the teachers at the close of the first six months of the reading experiment. Included in the interview were questions about their reactions to the records they kept for the study, their objectives in special education, their objectives in teaching reading to special classes, their feelings about special classes, their recommendations for training programs in special education, and also more personal questions about their own preparation in special education, motivations, and future plans. Data from this interview contributed toward the evaluation of teacher characteristics in relation to reading progress. (Appendix D shows the list of questions which guided this interview schedule.)

Speech Survey and Family Information Interview

Senior students majoring in speech at Newark State College made a speech survey of all the children. The results from this survey were analyzed by a speech expert. On the same occasion the speech students administered a structured interview to determine each child's home situation. In addition to questions about the name and age of siblings and the presence or absence of parents in the home, an inquiry was made into vocational aspirations in order to check upon similar information obtained in the Interest Interview. (Appendix E is a copy of the SPEECH SURVEY form and Appendix F presents the questions which guided the Family Information Interview.)

Questionnaires and Written Records

Teacher Records on Reading Activities

During the first six months of the reading experiment, each teacher was asked to keep two sets of records: a DAILY RECORD OF READING ACTIVITIES and ANECDOTAL RECORDS OF REACTIONS TO READING EXPERIENCES for each pupil. Written directions for the preparation of these records and reporting forms were provided. This requirement was discontinued after the first half of the experiment, since these records had in most cases tended to become repetitious by this time. (Appendix G and H includes copies of the directions and forms for each of these records.)

At the end of the experiment each teacher was asked to write out a summary of those methods and techniques of teaching reading that were found to be successful with these pupils and those methods and techniques which were found to be unsuccessful. It was stressed that the methods and techniques reported should be concerned not only with the formal reading lesson, but with any activity in which reading was involved.

The data obtained from the daily records and from the summaries provided information for the re-evaluation of the teachers, leading to the eventual reclassification of the study population into Experience, Semi-Experience and Traditional Groups. These data were also useful for their general information value for the teaching of reading to educable adolescents. (Appendix I presents samples of these teacher records.)

Teacher Estimates of Reading Level

The teachers were asked for periodic estimates of the reading level of their pupils. These estimates were given verbally without reference to test scores and prior to knowledge of the results from previous testing. Four estimates of the reading level were thus obtained for each pupil coinciding with reading test scores of January, June and September 1958, and January 1959. These teacher estimates were used in the study of reading progress.

Data From Records

Cumulative Record and Medical Data

Information about school entrance, entrance to special class, record of absences, medical background, and physical defects was collected for each pupil in the study. This information was obtained from official records in the principal's office and in the medical office in each participating school. While these records were complete with respect to the pupils' experience within the particular school system involved, they did not include experience outside that school system, e.g., experience in parochial and private schools or schools in a different community. The cumulative record data thus obtained were used both in the study of reading progress and in the study of high and low achievers in reading. The medical data obtained was considered inadequate for the purposes of this study, since only gross defects were recorded on the basis of a school physical examination. (Appendix J shows the record form used in recording these data.)

Teacher Training and Experience Data

The Office of the Superintendent of Schools in each of Communities A and B furnished information about the participating teachers to include: length of teaching experience, kind of teaching experience and training, and type of certification. These data were used in the evaluation of reading progress in relationship to teacher characteristics. (Appendix K shows the record form for recording these data.)

CHAPTER III

RESULTS

The findings of this study can be classified into three areas: (1) the investigation of reading progress of educable adolescents in an experimental program which stressed reading, (2) the investigation of levels of expectancy in reading for educable adolescents, and (3) the investigation of achievement in relation to background factors. For each of these areas of the study the data were considered in relation to the following questions:

Experimental Reading Program

I. Do educables who receive renewed emphasis on reading during adolescence show progress in reading?

II. Does emphasis on reading in an experience program result in greater progress among educable adolescents than emphasis in a traditional program of reading instruction?

III. What background factors are associated with progress in reading?

Investigation of Levels of Expectancy

I. Is mental age an adequate measure of reading expectancy for educables?

II. Is the Horn Index an adequate measure of reading expectancy for educables?

Comparative Study of High and Low Achievers

I. What background factors distinguish between high and low achievers in reading?

II. Do high achievers differ from low achievers in reading progress during the study?

Experimental Reading Program

In a 12 month experiment during which reading was emphasized with educable adolescents in special classes, the progress of these pupils was studied as a total group and as three groups representing three different programs of reading instruction. These three experimental groups were called: the Experience Group, the Semi-Experience Group, and the Traditional Group. In addition, progress was studied in relation to background factors involving specific physical, intellectual, familial, educational, teacher and community characteristics.

Progress of the Total Group

The progress of the group as a whole during the year of emphasis on reading was considered first in relation to what progress might be expected for them under usual conditions, i.e., without special emphasis on reading. Since the literature fails to offer a measure of expected progress for mentally retarded pupils, a hypothetical measure of progress expectancy was employed based on a percentage of the progress expectancy for normally intelligent pupils. This percentage was based on the ratio of retardate IQ to normal IQ. Since progress in reading for normal children is calculated as one school year of growth per school year of instruction, a child of average intelligence

(IQ 100) is expected to show a month's growth per month of instruction. Using the hypothetical measure of expected progress, children with IQ's between 50 to 79 would be expected to show five to eight months' growth per school year or 2.5 to four months' growth per semester. Since the median IQ for the study population was 68, the median months of progress expected for these educables would be slightly less than seven months (6.8 months) for the school year, or 3.4 months for each semester.

When the progress of the total sample was examined at the end of the year of emphasis on reading, it was found that these educables had exceeded their hypothetical growth expectancy by one month. The median growth for the entire group was eight months compared to the expected growth of seven months. When progress was considered on a sex basis, the median growth for boys was at expectancy and for girls two months beyond expectancy.

An analysis of their progress during the three intervals of the experiment reveals an interesting growth pattern. During the first semester, the median growth of three months for the total group was close to the expectancy of 3.5 months per semester. Boys progressed two months and girls four months. Growth during the second semester, the last interval of the year's experiment, was less than expected--two months for each sex. A surprising finding was the amount of growth that took place during the summer vacation interval which occurred between the two semesters. During the period when formal reading instruction was lacking, both boys and girls showed a gain of three months which is equivalent to the expectancy for a semester. This finding suggests that these educables were able to retain, assimilate and use what they had learned to continue their progress independently.

The above results which indicate reading progress in line with expectancy are not particularly remarkable until they are compared with evidence of progress and achievement by educables who did not receive special emphasis on reading. These non-study educables were an older group from the same communities who had not participated in the project.[1]

In Table 6 it is apparent that the study group, which was reading almost on a par with the older group before the experiment, progressed over the period of a year at least as well as expected, while the non-study group showed less than expected progress.[2] A Chi-square difference between these two groups (13.90) is significant at the one per cent level. This significant difference in progress in favor of the study group is further evidence that emphasis on reading contributes to progress in reading.

The comparison of the study group with the non-study group on the basis of achievement adds further evidence of a positive relationship between emphasis on reading and reading progress. In this comparison the median post-experimental reading score of the study group was

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[1] These older educables had been excluded from the study during preliminary screening because of the likelihood that they would leave school before the completion of the study.

[2] Progress data was available for this comparison as a result of a school-wide testing program in Community A which coincided with post-experimental testing.

Table 6

Comparison of Growth in Reading By Sex

Between Study Group and Non-Study Group

From January 1958 to January 1959

		MEDIAN SCORES				
GROUPS	NO.	CA	IQ	RDG.GR. 1958	RDG.Gr. 1959	GROWTH IN MOS.
Study Group						
Boys	95	13-10	68	2.6	3.3	7
Girls	67	13-4	69	3.7	4.6	9
Both Sexes	162					8
Non-Study Group						
Boys	22	16-10	69	3.4	3.6	2
Girls	11	16-0	62	3.6	3.8	2
Both Sexes	33					2

compared to the median pre-experimental (preliminary screening) reading score of the non-study educables who were eliminated when the classes were matched for chronological age. When compared on this basis, the two groups were of near-equivalent age. As can be seen from Table 7, the reading level of the study population was eight months higher than the non-study group reading level. The difference in achievement of these two groups is significant at the five per cent level (Chi-square = 5.19).

Table 7

Comparison of Reading Grade Level by Sex

Between Study Group and Non-Study Group

GROUPS	MEDIAN SCORES NO.	CA	IQ	RDG. GR.
Study Group				
Boys	95	14-10	68	3.3
Girls	67	14-4	69	4.6
Both Sexes	162			3.7
Non-Study Group				
Boys	50	15-1	67	2.8
Girls	30	14-6	70	3.2
Both Sexes	80			2.9

Progress According to Method

To answer the question whether emphasis on reading in an experience program results in greater progress than emphasis in a traditional program, progress was studied by a comparison of three groups classified according to the extent that experience methods were used. The Experience Group consisted of 63 pupils in classes where a full experience program was in effect. The Semi-Experience Group consisted of 32 pupils in classes where the teachers made partial use of experience methods, either failing to implement a full experience program or showing more variability in their approach than is characteristic of a traditional reading program. The Traditional Group consisted of 67 pupils in

Table 8

Analysis of Progress in Reading from January 1958 to January 1959

for Experience, Semi-Experience and Traditional Reading Groups

PROGRESS IN MONTHS	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL	
	BOYS N=24	GIRLS N=36	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=19
-7 to -5	0	0	0	0	1	0
-4 to -2	1	1	2	0	0	0
-1 to 1	3	7	3	0	1	0
2 to 4	4	4	6	4	4	2
5 to 7	3	5	8	1	12	3
8 to 10	5	5	2	0	9	6
11 to 13	4	8	3	0	8	5
14 to 16	1	4	1	0	4	1
17 to 19	3	2	2	0	4	1
20 to 22	0	0	0	0	0	1
23 to 25	0	0	0	0	0	0
26 to 28	0	0	0	0	1	0
Median	8	8	5	3	9	10
Q_1 to Q_3	3 to 12	2 to 12	2 to 10	2 to 6	5 to 13	7 to 13

Table 9

Analysis of Progress in Reading from January 1958 to June 1958 for Experience, Semi-Experience and Traditional Reading Groups

PROGRESS IN MONTHS	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL	
	BOYS N=24	GIRLS N=39	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=23
-13 to -11	1	2	0	0	1	0
-10 to -8	0	0	1	0	1	1
-7 to -5	1	0	2	0	2	0
-4 to -2	1	3	1	0	2	4
-1 to 1	3	9	11	1	8	3
2 to 4	7	8	7	3	15	0
5 to 7	5	7	3	1	9	13
8 to 10	3	5	0	0	4	0
11 to 13	2	5	1	0	2	0
14 to 16	1	0	1	0	0	2
Median	4	4	1	3	2	5
Q_1 to Q_3	1 to 8	0 to 8	-1 to 4	0 to 5	0 to 7	-1 to 7

Table 10

Analysis of Progress in Reading from June 1958 to September 1958

for Experience, Semi-Experience and Traditional Reading Groups

PROGRESS IN MONTHS	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL	
	BOYS N=23	GIRLS N=37	BOYS N=26	GIRLS N=5	BOYS N=42	GIRLS N=19
-16 to -14	1	0	1	0	0	0
-13 to -11	1	0	1	0	0	0
-10 to -8	2	1	0	0	0	0
-7 to -5	0	3	0	0	4	0
-4 to -2	1	5	3	1	4	0
-1 to 1	7	8	6	1	5	7
2 to 4	6	6	9	0	14	4
5 to 7	1	8	3	3	8	4
8 to 10	3	5	3	0	3	2
11 to 13	0	1	0	0	3	1
14 to 16	1	0	0	0	0	1
24	0	0	0	0	1	0
Median	1	2	2	5	3	4
Q_1 to Q_3	-1 to 4	-2 to 6	-1 to 4	-2 to 6	0 to 6	1 to 7

Table 11

Analysis of Progress in Reading from September 1958 to January 1959

for Experience, Semi-Experience and Traditional Reading Groups

PROGRESS IN MONTHS	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL	
	BOYS N=23	GIRLS N=36	BOYS N=27	GIRLS N=5	BOYS N=42	GIRLS N=18
-20	0	0	0	0	1	0
-10 to -8	0	0	0	0	0	1
-7 to -5	1	0	0	0	0	1
-4 to -2	6	8	2	1	2	1
-1 to 1	5	3	13	3	8	6
2 to 4	4	14	7	1	13	2
5 to 7	3	4	4	0	9	2
8 to 10	3	3	0	0	6	1
11 to 13	1	4	0	0	3	3
14 to 16	0	0	1	0	0	1
Median	1	3	1	0	4	1
Q_1 to Q_3	-2 to 7	-1 to 6	-1 to 4	-2 to 2	1 to 7	0 to 10

classes where reading was taught as a formal exercise along the lines of the basal reader.

As can be seen from Table 8, there is no significant difference in the progress made by the Experience Group and that of the Traditional Group. The Semi-Experience Group, on the other hand, showed less progress than the other two methods groups. The Chi-square (11.17) of this difference is significant at the five per cent level.

Analysis of progress according to the three intervals of the experiment is presented in Tables 9 to 11. Little difference is apparent among the groups during these time intervals.

Considering progress in relation to the hypothetical expectancy of seven months for the school year, the nine months growth of the Traditional Group is significant at the one per cent level (Chi-square = 10.14), while the less than expected progress of the Semi-Experience Group (five months for the boys and three months for the girls) is significant at the five per cent level (Chi-square = 5.14). The eight months progress of the Experience Group was not significant in relation to expectancy.

The analysis of progress on an individual class basis during the first semester[1] shows that the range of progress in the Semi-Experience Group was less than that occurring in either the Experience or the Traditional Groups. As is evident in Table 12, the range of median gains for all classes during this period was from zero to eight months.

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[1] The analysis of progress on an individual class basis was made for the first semester only, because there was an insufficient number of classes remaining intact for this analysis in the second semester of the experiment.

Table 12

Analysis of Reading Progress from January 1958 to June 1958 by Individual Classes According to Type of Reading Program

MONTHS	EXPERIENCE						SEMI-EXPERIENCE			TRADITIONAL					
	A N=13	B N=5	C N=12	D N=9	E N=12	F N=12	G N=12	H N=7	I N=13	J N=12	K N=11	L N=10	M N=11	N N=12	O N=11
-13 to -11	1	0	1	0	0	1	0	0	0	0	1	0	0	0	0
-10 to -8	0	0	0	0	0	0	1	0	0	0	0	0	1	1	0
-7 to -5	0	0	0	0	1	0	0	0	2	2	0	0	0	0	0
-4 to -2	2	0	1	0	1	0	0	0	1	0	1	1	0	1	3
-1 to 1	1	4	3	1	1	2	5	2	5	2	2	1	3	2	1
2 to 4	2	0	4	2	4	3	5	2	3	6	2	4	3	0	0
5 to 7	3	1	2	1	4	1	1	2	1	2	3	3	1	6	7
8 to 10	0	0	1	4	0	3	0	0	0	0	1	1	2	0	0
11 to 13	4	0	0	1	1	1	0	1	0	0	1	0	1	0	0
14 to 16	0	0	0	0	0	1	0	0	1	0	0	0	0	2	0
Median	5	0	2	8	3.8	4.5	1.5	4	0.4	2.5	3.8	3.8	3	5	5
$Q_3 - Q_1$	10	6	6	6	6	9	5	6	3	5	8	5	8	8	8

while within the Semi-Experience classes the range was only from four tenths of a month to four months.

The above results on progress according to method can be summarized under three general conclusions. First, the experience method showed no superiority over the traditional method of teaching reading from the standpoint of progress. The two experimental groups which represented these methods showed comparable growth in reading. Second, both groups were superior to a mixed-methods group which was neither strongly experiential nor traditional. And third, the groups that were taught by either traditional or experience methods showed progress that was at least in line with the expectancy for retardates (the Traditional Group progressed beyond expectancy), while the mixed-methods group (Semi-Experience) made less than expected progress.

Progress in Relation to Background Factors

To inquire into possible background factors associated with progress in reading, various physical, intellectual, familial, educational, teacher and community characteristics were related to reading progress.

Physical Factors. The five physical factors considered in relation to progress were: age, sex, race, handedness and speech. Among these characteristics, only handedness showed a significant relationship to progress.

Table 13 shows the distribution of progress in six month age intervals for boys and girls. Using the Kruskal-Wallis one-way analysis of variance by ranks (Siegel, 1956, p. 184), there was no significant difference at the one per cent level among the age groups of the boys (Chi-square = 9.86 with nine degrees of freedom). A similar test for

Table 13

Median Progress in Months by Age and Sex

from January 1958 to January 1959

CA	BOYS N=95	GIRLS N=60	BOTH SEXES N=155
11-6 to 11-11	9	-	9
12-0 to 12-5	9	3	9
12-6 to 12-11	7.5	7.5	9
13-0 to 13-5	9	9	9
13-6 to 13-11	6	9	6
14-0 to 14-5	6	9	6
14-6 to 14-11	9	9	12
15-0 to 15-5	15	9	12
15-6 to 15-11	3	6	3
16-0 to 16-5	-	-	-
16-6 to 16-11	12	-	12

girls revealed a significant difference at the five per cent level (Chi-square = 18.16 with seven degrees of freedom). Thus age did not affect progress in reading among these educable adolescent boys, while the relationship of age to progress was less definitely indicated among the adolescent girls.

Sex in relation to progess is illustrated in Table 14. A Chi-square of the median difference in progress made by boys and girls (6.64) reveals no significant difference between the two sexes.

Therefore, sex did not appear to influence progress within the age range represented.

Table 14

Progress in Reading by Sex

From January 1958 to June 1958

PROGRESS IN MONTHS	BOYS N=95	GIRLS N=60	BOTH SEXES N=155
-7 to -5	1	-	1
-4 to -2	3	1	4
-1 to 1	7	7	14
2 to 4	14	10	24
5 to 7	23	9	32
8 to 10	16	11	27
11 to 13	15	13	28
14 to 16	6	5	11
17 to 19	9	3	12
20 to 22	-	1	1
23 to 25	-	-	-
26 to 28	1	-	1
Median	7	9	8

The relation of racial differences to progress was also insignificant. As can be seen in Table 15, there was little variability

Table 15

Progress in Reading by Sex and Race

From January 1958 to January 1959

N = 155

PROGRESS	BOYS			GIRLS			BOTH SEXES		
IN MONTHS	WH. N=33	NEG. N=58	P.R. N=4	WH. N=20	NEG. N=39	P.R. N=1	WH. N=53	NEG. N=97	P.R. N=5
-7 to -5	-	1	-	-	-	-	-	1	-
-4 to -2	1	-	1	1	-	-	2	-	1
-1 to 1	5	3	1	3	4	-	8	7	1
2 to 4	4	9	-	4	5	1	8	14	1
5 to 7	3	17	1	2	7	-	5	24	1
8 to 10	7	9	1	3	8	-	10	17	1
11 to 13	8	7	-	4	9	-	12	16	-
14 to 16	1	5	-	2	3	-	3	8	-
17 to 19	3	7	-	-	3	-	3	10	-
20 to 22	-	-	-	1	-	-	-	-	-
23 to 25	-	-	-	-	-	-	-	-	-
26 to 28	1	-	-	-	-	-	1	-	-
Median	9	7	3	7.5	9	3	8	8	3

in progress within each racial group. Since only five Puerto Ricans were included, no conclusions can be made about their progress. Between Negro and white races median progress of both sexes is comparable. Although Negro girls made somewhat better progress than white girls, and white boys made somewhat better progress than Negro boys; generally speaking, race did not appear to affect progress in reading.

Handedness[1] as a physical characteristic was significant as a factor in reading progress. The right-handed child appeared to hold an important advantage over the left-handed child in terms of reading progress. As can be seen from Table 16, the median growth of right-handed children was double that of left-handed children. A Chi-square of 3.98 indicated that handedness was a significant factor at the five per cent level. Thus, handedness appeared to have some effect on reading progress.

As indicated in CHAPTER II, a thorough survey of each child's speech was made by senior students majoring in speech correction who had previous experience in making phonetic analysis. The three classifications of speech were made on the basis of intelligibility. Thus, those classified as No Problem showed no difficulty in articulation; those classified as Mild Speech Defect showed three or four distortions, substitutions and/or omissions which did not interfere with intelligibility; and those classified as Severe Speech Defect showed speech difficulties which interfered with intelligibility.

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[1] Handedness was determined by observing the hand used in writing.

Table 16

Progress in Reading by Sex and Handedness

from January 1958 to January 1959

PROGRESS IN MONTHS	RIGHT-HANDED BOYS N=79	RIGHT-HANDED GIRLS N=55	RIGHT-HANDED TOTAL N=134	LEFT-HANDED BOYS N=16	LEFT-HANDED GIRLS N=5	LEFT-HANDED TOTAL N=21
-7 to -5	1	-	1	-	-	-
-4 to -2	2	1	3	1	-	1
-1 to 1	5	4	9	2	3	5
2 to 4	10	9	19	4	1	5
5 to 7	18	9	27	4	-	4
8 to 10	15	11	26	2	-	2
11 to 13	12	13	25	3	-	3
14 to 16	6	4	10	-	1	1
17 to 19	9	3	12	-	-	-
20 to 22	-	1	1	-	-	-
23 to 25	-	-	-	-	-	-
26 to 28	1	-	1	-	-	-
Median Progress	8	9	8	5	1	4

An analysis of the speech findings reported in Table 17 indicates that speech did not seem to affect progress in reading. While the number of Mild cases may seem high by comparison with the No Problem cases, it must be realized that any deviation in articulation was considered a defect. Thus, since more than half of the group were Negro, many from

Table 17

Progress in Reading by Sex and Speech Defect

from January 1958 to January 1959

PROGRESS IN MONTHS	SPEECH CLASSIFICATION								
	NO PROBLEM			MILD			SEVERE		
	BOYS N=38	GIRLS N=26	TOTAL N=64	BOYS N=39	GIRLS N=34	TOTAL N=73	BOYS N=18	GIRLS N=0	TOTAL N=18
-7 to -5	1	-	1	-	-	-	-	-	-
-4 to -2	1	1	2	-	-	-	1	-	1
-1 to 1	2	3	5	2	4	6	3	-	3
2 to 4	3	6	9	8	4	12	3	-	3
5 to 7	11	5	16	8	4	12	5	-	5
8 to 10	7	1	8	6	10	16	3	-	3
11 to 13	8	5	13	4	8	12	2	-	2
14 to 16	2	4	6	5	1	6	-	-	-
17 to 19	3	1	4	6	2	8	-	-	-
20 to 22	-	-	-	-	1	1	-	-	-
23 to 25	-	-	-	-	-	-	-	-	-
26 to 28	-	-	-	-	-	-	1	-	1
Median Progress	8	6	7	8	9	9	6	-	6

the South, and most of the children were products of a deprived cultural environment, the relatively high number of Mild Speech Defects appears less important. Other evidence of the insignificant effect of speech on progress is the comparable median progress of the total group with

No Problem and the total group with Severe Speech Defects. It is interesting that none of the girls were classified under Severe Speech Defects.

Intellectual Factors. The effect of intellectual factors on progress in reading was studied in an effort to discover if progress in reading was associated with verbal or nonverbal types of ability or by a potential which had not been realized. Three tests of intelligence were used: the Stanford-Binet, the Lorge-Thorndike Nonverbal Test, and the House-Tree-Person Test. Among the measures considered, no relationship was found between progress and intelligence.

The median progress of boys and girls in various IQ ranges, as measured by the Stanford-Binet, is presented in Table 18. As can be seen from this table, very little progress was made in the lowest IQ range (50 to 54). However, in the other IQ ranges there was no evident correspondence between progress and IQ. Therefore, it would seem safe to conclude that the IQ did not affect the reading progress of this group except, perhaps, in the lowest range.

The finding that mental age was not related to progress was not surprising in view of the previous results indicating that age (considered under Physical Factors) and IQ did not affect progress. Table 19 presents the evidence on mental age in relation to progress. This table does show, however, that children with the lowest mental age (six years and six months to six years and eleven months) made the least gain in reading. A one-way analysis of the variance yielded a Chi-square of 14.51 for the boys and 9.59 for the girls (with eight degrees of freedom in each case), and neither Chi-square was significant at the one percent level. Thus it is apparent that mental age, as well as the IQ, was not

Table 18

Median Reading Progress in Months

in Relation to Stanford-Binet IQ

from January 1958 to January 1959

IQ	MEDIAN PROGRESS					
	BOYS		GIRLS		BOTH SEXES	
	MONTHS	N=95	MONTHS	N=60	MONTHS	N=155
50 - 54	3	3	0	3	1.5	6
55 - 59	7.5	10	7.5	4	7.5	14
60 - 64	9	15	3	11	7.5	26
65 - 69	6	26	12	13	6	39
70 - 74	9	30	9	19	9	49
75 - 79	9	11	9	10	9	21

generally associated with progress in reading; while the children with the lowest IQ's and lowest mental age, which corresponds with the mental age recommended for beginning reading, represented a possible exception to this conclusion.

In Table 20 progress is shown in relation to nonverbal areas of the Lorge-Thorndike Test. A comparison of this table with Table 18 reveals a considerably wider range of IQ scores on the Lorge-Thorndike test (40 to 114) than on the Stanford-Binet (50 to 79). Inspection of Table 20 shows further that progress was relatively stable in the various IQ ranges, that is, the children with high nonverbal ability showed no greater progress than those with limited nonverbal ability.

Table 19

Median Reading Progress in Months in Relation to Stanford-Binet Mental Age from January 1958 to January 1959

MENTAL AGE	MEDIAN PROGRESS					
	BOYS		GIRLS		BOTH SEXES	
	MONTHS	N=95	MONTHS	N=60	MONTHS	N=155
6-6 to 6-11	3	1	1.5	2	3	3
7-0 to 7-5	3	3	4.5	4	3	7
7-6 to 7-11	7.5	8	3	3	6	11
8-0 to 8-5	9	13	12	7	10.5	20
8-6 to 8-11	9	14	12	12	9	26
9-0 to 9-5	9	18	9	14	9	32
9-6 to 9-11	6	22	9	10	9	32
10-0 to 10-5	6	10	6	7	6	17
10-6 to 10-11	9	6	6	1	9	7

Analyses of the H-T-P test results in relation to progress through four measures of intelligence are presented in Tables 21 and 22. This projective drawing test has been described by Buck (1948, p. 38) as "an expression of basic intelligence as that basic intelligence has been enhanced and/or depressed by the non-intellective factors of the intelligence." Since the H-T-P is a completely nonverbal test not even including the use of symbols, it was used in an effort to uncover capacity otherwise unrevealed because of difficulties in verbalization and in the

Table 20

Median Reading Progress in Months in Relation to Lorge-Thorndike Nonverbal IQ from January 1958 to January 1959

IQ	MEDIAN PROGRESS					
	BOYS		GIRLS		BOTH SEXES	
	MONTHS	N=95	MONTHS	N=60	MONTHS	N=155
40 - 44	-	-	0	1	0	1
45 - 49	12	3	-	-	12	3
50 - 54	6	2	12	1	12	3
55 - 59	9	4	-	-	9	4
60 - 64	6	8	3	7	6	15
65 - 69	12	10	6	3	12	13
70 - 74	6	18	7.5	10	6	28
75 - 79	6	24	12	19	9	43
80 - 84	6	14	7.5	14	6	28
85 - 89	12	5	11	3	12	8
90 - 94	3	2	6	1	6	3
95 - 99	12	4	0	1	9	5
100 - 104	-	-	-	-	-	-
105 - 109	-	-	-	-	-	-
110 - 114	27	1	-	-	27	1

use of symbols. The four IQ scores employed in the analysis of H-T-P results are as follows: *Raw G IQ* which represents the quantity or how much the subject does; *Net Weighted IQ* which is considered to stress the quality or how well he does something; *Flaw IQ* which purports to measure productivity or his power of criticality; *Good IQ* which is described as indicating his ability to appraise reality.

According to Buck (1951) the difference between Raw G IQ and Net Weighted IQ indicates the functioning level of the subject in relation to his capacity. He suggested that in the majority of cases the Net Weighted IQ is one to ten points above the Raw G IQ and that a 15-or-more point difference indicates that the individual is functioning far below his capacity. Any excess of Raw G IQ over Net Weighted IQ would thus represent increasing efficiency.

In Table 21 it is apparent that only one child was identified as working below his capacity according to Buck's rationale; and 60 children or approximately 39 percent of the group appeared to be functioning efficiently. By inspection it is obvious that reading progress bore no relationship to this measure of efficiency.

The term social effectiveness could be used to describe Buck's interpretation of the difference between the Good and Flaw IQ scores. He stated that the Good IQ is usually higher than the Flaw IQ but that an excess of 15 points or more indicates general behavior that is likely to be vacillating and inefficient. At 15 points and beyond he would expect a failure to function socially at a level equal to the amount of critical judgment possessed by the subject.

Table 21

Median Reading Progress in Months in Relation to the Difference Between Raw G and Net Weighted IQ's on the H-T-P from January 1958 to January 1959

RAW G IQ MINUS NET WEIGHTED IQ	MEDIAN PROGRESS					
	BOYS		GIRLS		BOTH SEXES	
	MONTHS	N=94	MONTHS	N=60	MONTHS	N=154
-25 to -23	9	1	-	-	9	1
-22 to -20	-	-	-	-	-	-
-19 to -17	-	-	-	-	-	-
-16 to -14	-	-	-	-	-	-
-13 to -11	6	3	-	-	6	3
-10 to -8	6	8	4.5	2	6	10
-7 to -5	4.5	14	12	8	6	22
-4 to -2	10.5	10	6	9	9	19
-1 to 1	9	21	9	18	9	39
2 to 4	9	22	9	14	9	36
5 to 7	6	9	9	6	9	15
8 to 10	6	4	9	1	6	5
11 to 13	-	-	0	2	0	2
14 to 16	-	-	-	-	-	-
17 to 19	-	-	-	-	-	-
20 to 22	10.5	2	-	-	10.5	2

Table 22

Median Reading Progress in Months in Relation to the Difference of Good and Flaw IQ's on H-T-P from January 1958 to January 1959

GOOD IQ MINUS FLAW IQ	MEDIAN PROGRESS					
	BOYS		GIRLS		BOTH SEXES	
	MONTHS	N=94	MONTHS	N=60	MONTHS	N=154
-25 to -23	9	1	-	-	9	1
-22 to -20	12	3	12	1	12	4
-19 to -17	9	1	-	-	9	1
-16 to -14	6	3	12	1	7.5	4
-13 to -11	18	3	6	1	13.5	4
-10 to -8	7.5	4	10.5	2	10.5	6
-7 to -5	12	7	9	5	10.5	12
-4 to -2	3	1	6	6	3	7
-1 to 1	12	11	7.5	2	12	13
2 to 4	6	7	4.5	6	6	13
5 to 7	9	7	4.5	2	6	9
8 to 10	9	8	15	1	12	9
11 to 13	6	9	10.5	8	6	17
14 to 16	6	7	9	4	6	11
17 to 19	6	7	6	5	6	12
20 to 22	9	4	12	3	9	7
23 to 25	3	4	7.5	6	6	10
26 to 28	17	3	-	-	17	3
29 to 31	12	1	7.5	2	12	3
32 to 34	-	-	15	1	15	1
35 to 37	12	1	9	4	12	5
38 to 40	-	-	-	-	-	-
41 to 43	9	1	-	-	9	1
44 to 46	0	1	-	-	0	1

According to Table 22, 54 children, or 35 percent of the group, had Good IQ scores that were 14 or more points higher than Flaw scores; and 10 children, or 7 percent, had Good scores that were 14 or more points lower than Flaw scores. Social effectiveness, as thus measured, was unrelated to progress according to the evidence on Table 22.

Familial Factors. There were three factors about home conditions that were studied in relation to progress, namely, number of siblings, position in family, and the presence of parents in the home. None of these factors appeared to be significantly related to progress.

The analysis of progress in relation to number of siblings is presented in Table 23, and no correspondence is apparent.

As can be seen from Table 24, the analysis of progress in relation to position in the family, the oldest and youngest siblings showed equal growth in reading. There was less variability among the youngest and middle children than among the oldest. Least variability occurred in the group having no siblings, but the small number of "only" children is inadequate for comparison with the other groups.

From Table 25, it is apparent that there is little difference in progress among those who live with either one of their parents or both. The variability in each of these three groups is the same.

Educational Factors. During the experiment a number of subjects were transferred to other classes for administrative reasons beyond the control of the project personnel. Some of these subjects were transferred to other special classes not in the study originally, and some went to a regular class.

Table 23

Median Reading Progress in Months in Relation to Siblings in the Family from January 1958 to January 1959

NUMBER OF SIBLINGS	MEDIAN PROGRESS					
	BOYS		GIRLS		BOTH SEXES	
	MONTHS	N=95	MONTHS	N=60	MONTHS	N=155
0	6	5	4.5	4	6	9
1	12	13	12	7	12	20
2	9	18	12	5	12	23
3	9	14	9	8	9	22
4	6	14	6	9	6	23
5	6	10	6	7	6	17
6	7.5	10	4.5	4	9	14
7	9	2	7.5	4	7.5	6
8	3	1	9	3	7.5	4
9	4.5	4	3	1	3	5
10 to 17	6	4	9	8	7.5	12

Table 24

Median Reading Progress in Months in Relation to Position in the Family from January 1958 to January 1959

POSITION IN FAMILY	N	MEDIAN PROGRESS IN MONTHS	Q_1 TO Q_3
Youngest			
Boys	25	6	3 to 14
Girls	13	12	3 to 14
Both sexes	38	9	3 to 13
Middle			
Boys	41	6	4 to 12
Girls	33	6	3 to 11
Both sexes	74	6	3 to 12
Oldest			
Boys	24	9	6 to 12
Girls	10	12	6 to 14
Both sexes	34	9	6 to 13
Only			
Boys	5	6	1 to 8
Girls	4	4.5	0 to 9
Both sexes	9	6	0 to 6

Table 25

Median Reading Progress in Months in Relation to Parents in the Home from January 1958 to January 1959

PARENTS IN HOME	N	MEDIAN PROGRESS IN MONTHS	Q_1 TO Q_3
Both Parents			
Boys	57	6	3 to 10
Girls	29	9	3 to 14
Both sexes	86	7	3 to 12
Only Mother			
Boys	22	10.5	5 to 15
Girls	20	7.5	3 to 12
Both sexes	42	9	3 to 12
Only Father			
Boys	10	12	8 to 17
Girls	0	-	-
Neither Parent			
Boys	6	4.5	3 to 11
Girls	11	10	6 to 12
Both sexes	17	8	3 to 12

An analysis of the effect of these changes on progress is presented in Table 26. The effect of these changes appeared to be unimportant from the standpoint of progress. The children who went to a regular class did equally as well as those who transferred to another special class or remained in the same special class.

Teacher Characteristics. It is generally recognized that the individual teacher is a key influence in helping children to learn. Therefore, certain characteristics of teacher influence considered likely to affect reading progress were examined in relation to progress. The characteristics isolated for study were: teaching experience and training, satisfaction in teaching educables, and accuracy of their evaluation of the reading ability of their pupils. An important characteristic, undergraduate training in special education, was a common lack among all participating teachers and the results on teacher influence must be viewed with this fact in mind.

The results were essentially negative or inconclusive when progress was considered in relation to the characteristics of teacher influence isolated for study. The evidence leading to this conclusion is presented in Tables 27, 28 and 29.

Progress in relation to teaching experience is presented in Table 27. Each of the 15 teachers in the experiment is identified by a letter ranging from A to O corresponding to the letter designation assigned in Table 12. The teachers have been grouped into three levels of progress ranging from highest to lowest progress for the purpose of examining the effect of teaching experience and training on progress. The four categories of experience considered were: years teaching elementary classes, years teaching reading, years teaching educables,

Table 26

Progress in Reading of Children Who Remained in Same Class, Transferred to Another Special Class, or Transferred to Regular Class from September 1958 to January 1959

PROGRESS IN MONTHS	CHANGES IN PUPIL PLACEMENT								
	SAME CLASS			ANOTHER SPECIAL CLASS			REGULAR CLASS		
	BOYS N=47	GIRLS N=24	BOTH N=71	BOYS N=21	GIRLS N=34	BOTH N=55	BOYS N=23	GIRLS N=6	BOTH N=29
-22 to -20	0	0	0	0	0	0	1	0	1
-19 to -17	0	0	0	0	0	0	0	0	0
-16 to -14	0	0	0	0	0	0	0	0	0
-13 to -11	0	0	0	0	0	0	0	0	0
-10 to -8	0	0	0	0	1	1	1	0	1
-7 to -5	1	1	2	0	0	0	0	0	0
-4 to -2	4	4	8	2	5	7	3	2	5
-1 to 1	15	3	18	6	10	16	5	2	7
2 to 4	14	10	24	3	6	9	7	2	9
5 to 7	6	3	9	7	3	10	3	0	3
8 to 10	4	1	5	3	3	6	1	0	1
11 to 13	2	2	4	0	5	5	2	0	2
14 to 16	1	0	1	0	1	1	0	0	0
Median Progress	2	3	2	4	2	2	2	-.5	2

and total number of years teaching. Within each group the amount of variability, i.e. median progress in relation to interquartile range, was the criterion in evaluating good results.

Group I is represented by only one teacher who showed the best record of progress. A newcomer in the field of special education with only two years experience teaching educables, nevertheless, Teacher D produced more progress in reading in her class than any other teacher. It should be noted that her experience teaching reading in a regular elementary class was quite extensive.

The teachers in Group II were generally comparable in the amount of variability in class progress as well as in median growth, but there were considerable differences in their experience and training. Three teachers (O, E and L) had no experience in teaching elementary school nor in teaching reading in a regular class as compared to five teachers (A, N, F, H and K) who had experience in these areas. Experience in teaching educables ranged from one to 28 years.

In Group III the differences in progress among these classes appears negligible in the context of considerable differences in experience and training. Teachers B, C and G had experience in all the categories of experience explored, while Teachers M, J and I had experience in teaching educables only.

When progress is considered in relation to training, the results fail to indicate any relationship between progress and (1) the number of reading courses taken and (2) certification as a teacher of special classes.

From Table 27 it can be seen that all but one of the teachers had taken at least one course in the teaching of reading, most teachers

Table 27

Median Reading Progress in Months in Relation to Years of Teaching Experience, Types of Certification, and Number of Reading Courses From January 1958 to January 1959

	CLASS TEACHERS														
	GROUP I	GROUP II								GROUP III					
	D	A	E	F	H	K	L	N	O	B	C	G	I	J	M
Median Progress in Months	8	5	3.8	4.5	4	3.8	3.8	5	5	0	2	1.5	1	2.5	3
Q_3-Q_1	6	10	6	9	6	8	5	8	8	6	6	5	3	5	8
Years Teaching Experience	20	32	2	6	34	38	3	9	18	34	29	8	5	3	4
Elementary	18	20	0	1	6	3	0	5	0	19	10	4	0	0	0
Reading	18	20	0	1	6	3	0	5	0	19	10	4	0	0	0
Educables	2	12	2	5	28	1	2	3	3	15	3	4	5	2	4
Type Certification[a]	L	P	L	L	P	E	L	L	L	P	E	P	P	L	P
Number Reading Courses	1	2	1	1	1	0	1	6	1	3	1	3	1	2	1

[a] P refers to Permanent, L to Limited, and E to Emergency.

having had one course and one person having had six courses. The absence of a relationship between courses in reading and class progress is evident from a comparison of the high and the low progress classes on this basis.

Preliminary to discussing the results on certification, it is important to discuss the three types of New Jersey State certificates held among this group of teachers: namely, Permanent, Limited and Emergency. A Limited Certificate is granted to teachers who have satisfied the state requirements of courses in special education,[1] and this certificate becomes permanent upon the completion of three years of successful teaching of special classes in the state. The Emergency Certificate is permitted when qualified teachers are scarce, and it is awarded with the understanding that the teacher will acquire the necessary training for certification within a specified period of time. The data were too limited to permit definite conclusions about the relationship of progress and certification. There were only two Emergency Certificates among the 15 teachers, and the highest progress group included only one teacher.

The question of progress in relation to job satisfaction of the teacher was studied. Evidence from a structured interview held at the end of the first semester was used. The interview raised questions related to their attitudes toward the mentally retarded and special classes, and to the satisfactions they achieved through their work.

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[1] The New Jersey State requirements for a Limited Certificate can be summarized as follows: (1) the possession of a Teaching Certificate (not necessarily in the field of the handicapped); (2) 18 semester hours in specific courses related to the handicapped; (3) 150 hours of student teaching or one year of successful experience teaching the mentally retarded.

There was a slight indication of a relationship between the progress of their classes and the teachers' satisfaction with their work, but the data was generally inconclusive. Thus, all but four teachers seemed satisfied in teaching educables and wished to continue this kind of teaching in preference to a regular class. Some indicated a desire to move into supervision because it would pay more money, but they wished to remain in the field of the mentally retarded. The four who expressed dissatisfaction with their present position definitely did not enjoy teaching educables, and three of them indicated a definite desire to remove themselves from the field of mental retardation.

The relationship of progress to the teachers' estimate of progress was examined by comparing the difference between the January and June estimated reading level with the actual difference between the January and June reading scores. Thus, estimated progress was compared to actual progress. Tables 28 and 29 present these comparisons for boys and girls, respectively.

The results suggest that teachers tended to overestimate the progress of boys. A Chi-square of 10.14 of the difference between estimated and actual progress was significant at the one per cent level. While teachers seemed to underestimate the progress of girls, the Chi-square of 3.71 of the difference between estimated progress and actual progress was not significant. Thus, teachers seemed to be more realistic in estimating the progress of girls than boys. This result may bear some relationship to the finding that girls achieve better than boys, however, such an inference is only tentative in view of the limited evidence to support it.

Table 28

Progress in Reading in Relation to Difference Between Teacher Estimates of Boys' Reading Level in January 1958 and June 1958

PROGRESS IN MONTHS	DIFFERENCE BETWEEN TEACHER ESTIMATES IN MONTHS							
	-10 to -6	-5 to -1	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29
-13 to -11	0	0	0	0	1	0	0	0
-10 to -8	0	0	0	1	0	0	0	1
-7 to -5	0	1	1	1	2	0	0	0
-4 to -2	1	0	1	1	0	0	0	0
-1 to 1	0	0	3	8	4	4	1	0
2 to 4	1	2	9	9	4	1	0	0
5 to 7	0	4	4	3	1	1	1	0
8 to 10	0	0	3	3	0	0	0	0
11 to 13	0	1	0	2	1	0	0	0
14 to 16	0	0	1	1	0	0	0	0
N	2	8	22	29	13	6	2	1
Median Progress	0	5	3	2	1	1	3	9

Table 29

Progress in Reading in Relation to Difference Between Teacher Estimates of Girls' Reading Level in January 1958 and June 1958

PROGRESS IN MONTHS	DIFFERENCE BETWEEN TEACHER ESTIMATES IN MONTHS							
	-5 to -1	0 to 4	5 to 9	10 to 14	15 to 19	20 to 24	25 to 29	30 to 34
-13 to -11	0	1	0	0	1	0	0	0
-10 to -8	0	0	0	0	1	0	0	0
-7 to -5	0	0	0	0	0	0	0	0
-4 to -2	1	0	3	2	1	0	0	0
-1 to 1	1	5	3	2	0	1	0	0
2 to 4	0	2	4	2	1	0	0	0
5 to 7	3	7	5	5	0	0	0	1
8 to 10	0	3	1	0	0	0	0	0
11 to 13	0	1	2	1	0	1	0	0
14 to 16	0	0	0	2	0	0	0	0
N	5	19	18	14	4	2	0	1
Median Progress	5	5	4	5	-6	6	-	6

Community Differences. Since the special education programs in Communities A and B differ in a number of important ways, inquiry was made into possible differences in reading progress between these communities. The differences in the special education programs of these two communities that could affect progress can be summarized as follows: (1) length of time the program was established, (2) the kind of administrative organization, (3) the establishment of procedures for special class admission and removal, (4) the establishment of certification as a requirement for teachers of special classes.

The program for special education in Community A has developed gradually in contrast to a sudden and rapid growth in Community B since 1954, the year state legislation for mandatory special classes was enacted. A Department of Psychological Services and Special Education to administer and supervise the program of special education has been in existence in Community A since 1935, compared to the appointment of a single supervisor for this purpose in Community B since 1955. The number of special classes for the retarded in Community A increased from 21 in 1953 to 27 in 1958, a moderate growth, compared to the tremendous increase in these classes in Community B from 14 in 1953 to 67 in 1958. Standard procedures for admission to special class and for removal have been instituted in Community A but not in Community B, and certification as a requirement for teaching special classes has been established in Community A but not in Community B.

When progress in Community A is related to progress in Community B, the results show no significant difference between the two communities. Table 30 shows the median progress in both communities. The difference in median growth (Chi-square = .74)was not significant at the .01 level.

Table 30

Progress in Reading in Communities A and B from January 1958 to January 1959

N = 155

PROGRESS IN MONTHS	COMMUNITY A			COMMUNITY B		
	BOYS N=32	GIRLS N=26	BOTH N=58	BOYS N=63	GIRLS N=34	BOTH N=97
-7 to -5	0	0	0	1	0	1
-4 to -2	1	0	1	2	1	3
-1 to 1	2	3	5	5	4	9
2 to 4	8	7	15	6	3	9
5 to 7	8	2	10	15	7	22
8 to 10	2	5	7	14	6	20
11 to 13	6	5	11	9	8	17
14 to 16	2	2	4	4	3	7
17 to 19	3	1	4	6	2	8
20 to 22	0	1	1	0	0	0
23 to 25	0	0	0	0	0	0
26 to 28	0	0	0	1	0	1
Median Progress	6	8	7	8	8	8
Q_1 to Q_3	3 to 12	3 to 12	3 to 12	5 to 12	5 to 12	5 to 12

When median reading achievement scores of the two communities at the beginning and end of the experiment were compared, no significant difference was found. Table 31 shows the reading achievement scores of each community before the experiment and Table 32 shows the reading achievement scores after the experiment. The Chi-squares of 1.53 and .53 between the two communities for pre-experimental and post-experimental reading achievement scores, respectively, were not significant at the .01 level. Thus, while Community A seemed to have a more effective program of special education than Community B, the progress and also the achievement in both communities was comparable.

Table 31

Reading Achievement Grades in Communities A and B

in January 1958

N = 162

READING GRADE	COMMUNITY A BOYS N=32	COMMUNITY A GIRLS N=30	COMMUNITY A BOTH N=62	COMMUNITY B BOYS N=63	COMMUNITY B GIRLS N=37	COMMUNITY B BOTH N=100
0	1	0	1	0	0	0
.5 to .7	2	0	2	1	1	2
.8 to 1.0	0	0	0	0	0	0
1.1 to 1.3	0	0	0	0	0	0
1.4 to 1.6	2	0	2	2	0	2
1.7 to 1.9	7	1	8	7	1	8
2.0 to 2.2	3	4	7	4	0	4
2.3 to 2.5	3	2	5	14	1	15
2.6 to 2.8	3	1	4	7	4	11
2.9 to 3.1	3	4	7	4	3	7
3.2 to 3.4	1	3	4	9	2	11
3.5 to 3.7	1	4	5	5	5	10
3.8 to 4.0	3	3	6	3	5	8
4.1 to 4.3	1	4	5	0	4	4
4.4 to 4.6	0	2	2	4	3	7
4.7 to 4.9	1	0	1	1	1	2
5.0 to 5.2	1	1	2	0	3	3
5.3 to 5.5	0	1	1	2	4	6
Median	2.4	3.45	2.9	2.7	3.8	3.2

Table 32

Reading Achievement Grades in Communities A and B

In January 1959

N = 155

READING GRADE	COMMUNITY A			COMMUNITY B		
	BOYS N=32	GIRLS N=26	BOTH N=58	BOYS N=63	GIRLS N=34	BOTH N=97
1.4 to 1.6	1	0	1	1	0	1
1.7 to 1.9	4	0	4	0	1	1
2.0 to 2.2	4	3	7	7	0	7
2.3 to 2.5	2	2	4	3	0	3
2.6 to 2.8	4	0	4	4	2	6
2.9 to 3.1	5	1	6	10	4	14
3.2 to 3.4	0	2	2	8	3	11
3.5 to 3.7	3	1	4	5	0	5
3.8 to 4.0	3	3	6	1	0	1
4.1 to 4.3	0	3	3	3	0	3
4.4 to 4.6	0	3	3	5	2	7
4.7 to 4.9	2	1	3	3	5	8
5.0 to 5.2	0	0	0	2	5	7
5.3 to 5.5	0	3	3	5	5	10
5.6 to 5.8	2	3	5	3	3	6
5.9 to 6.1	0	1	1	1	3	4
6.2 to 6.4	2	0	2	2	1	3
Median	2.9	4.1	3.5	3.4	4.95	3.9

Investigation of Levels of Expectancy

The proper evaluation of reading achievement necessarily depends on the level of achievement that can be expected. This expectancy is generally measured in terms of the child's mental age, that is, the child is expected to achieve at a grade level equivalent to his mental age. Another measuring device in current use is the Horn Index which considers mental age but corrects for chronological age. Therefore, both mental age and the Horn Index were explored for use with the study data to determine expected achievement in reading and thereby to evaluate the achievement and progress accomplished by emphasis on reading in the experiment. When these measures of expectancy were applied to the data, questions were raised about their adequacy for use with the mentally retarded.

Sex Differences

A specific problem in predicting reading achievement for the study group was the existence of a sex difference. This sex difference was consistently in favor of the girls both at the beginning of the experiment and at the end of the year of emphasized reading instruction, as can be seen from Table 33. On the initial testing of the group, the median reading grade for the girls was one year higher than that for the boys. This difference was significant at the one per cent level (Chi-square = 20.24). At the end of the experiment, the difference in achievement was somewhat greater and still in favor of the girls. This difference was also significant at the one per cent level (Chi-square = 14.32).

Table 33

Distribution of Reading Achievement Scores by Sex

in January 1958 and January 1959

READING GRADE	JANUARY 1958 BOYS N=95	JANUARY 1958 GIRLS N=67	JANUARY 1959 BOYS N=95	JANUARY 1959 GIRLS N=60
1.0 and below	4	1	0	0
1.1 to 1.3	0	0	0	0
1.4 to 1.6	4	0	2	0
1.7 to 1.9	14	2	4	1
2.0 to 2.2	7	4	11	3
2.3 to 2.5	17	3	5	2
2.6 to 2.8	10	5	8	2
2.9 to 3.1	7	7	15	5
3.2 to 3.4	10	5	8	5
3.5 to 3.7	6	9	8	1
3.8 to 4.0	6	8	4	3
4.1 to 4.3	1	8	3	3
4.4 to 4.6	4	5	5	5
4.7 to 4.9	2	1	5	6
5.0 to 5.2	1	4	2	5
5.3 to 5.5	2	5	5	8
5.6 to 5.8	0	0	5	6
5.9 to 6.1	0	0	1	4
6.2 to 6.4	0	0	4	1
Median	2.7	3.7	3.3	4.65

Measures of Expectancy

Neither of the generally used measures of expectancy, mental age and the Horn Index, take into account sex differences. As is well known, the mental age measure derived from the Stanford-Binet has common norms for boys and girls. The Horn Index, while it takes into account chronological age as well as mental age, also lacks provision for sex differences. Since sex differences in reading achievement were definitely indicated by the data, these measures were applied separately for boys and girls.

Mental Age. When mental age as the criterion of expectancy was applied to the data, the mean expected achievement for each sex differed from actual achievement both at the beginning and the end of the experiment. Mean expectancies based on mental age at the beginning and end of the experiment are presented in Table 34; Table 35 shows actual mean achievement scores. A comparison of Tables 34 and 35 shows that boys were one year and one month below the mean expected achievement level at the beginning of the experiment in 1958 and seven months below at the close of 1959. The girls achieved somewhat closer to their mean expected level since they were one month below expectancy in 1958 and two and a half months above in 1959.

When mental age reading expectancy was correlated with actual achievement, significant relationships were found for both boys and girls. The correlation between mental age reading expectancy and actual reading achievement for boys was relatively the same at the beginning of the experiment (r=.38) and at the end (r=.35), as can be seen from

Table 34

Means, Standard Deviations and Standard Errors of the Means of Mental Age Reading Expectancy Grades in January 1958 and January 1959

	N	M	SD	SEM
January 1958				
Boys	95	3.81	.92	.09
Girls	67	3.73	.91	.11
Both sexes	162	3.78	.90	.07
January 1959				
Boys	95	4.25	.93	.10
Girls	60	4.12	.89	.11
Both sexes	155	4.20	.91	.07

Table 35

Means, Standard Deviations and Standard Errors of the Means of Reading Achievement Grades in January 1958 and January 1959

	N	M	SD	SEM
January 1958				
Boys	95	2.75	1.05	.11
Girls	67	3.63	1.00	.12
Both sexes	162	3.11	1.13	.09
January 1959				
Boys	95	3.56	1.27	.13
Girls	60	4.37	1.21	.16
Both sexes	155	3.88	1.29	.10

Table 36. This correlation improved for the girls from .36 at the beginning to .50 at the end of the experimental year. These relationships are illustrated graphically in Figures 1 and 2. In both 1958 and 1959 there appeared to be closer correspondence between achievement and mental age expectancy for girls than for boys.

When a comparison was made of the correlation co-efficient and the correlation ratio for the entire group in 1958, it was found that the relationship between expected achievement based on mental age

Table 36

Pearson Product-Moment Correlation Co-efficients Between Mental Age Reading Expectancy Grades and Reading Achievement Grades, and the Significance of the Difference Between the Correlations Obtained in January 1958 and January 1959

GROUP	JANUARY 1958 N	 r	JANUARY 1959 N	 r	z	P
Boys	95	.38	95	.35	.24	.81
Girls	67	.36	60	.50	.95	.34
Both sexes	162	.33	155	.36	.30	.76

and actual achievement seemed to be almost curvilinear. In 1959 there was little change in this relationship. Table 37 presents the evidence of these comparisons.

While there were significant relationships between mental age expectancy and achievement for boys and girls at the beginning and at the end of the experiment, the size of the correlations did not indicate that mental age was an adequate measure of expected achievement in reading for these educable adolescents.

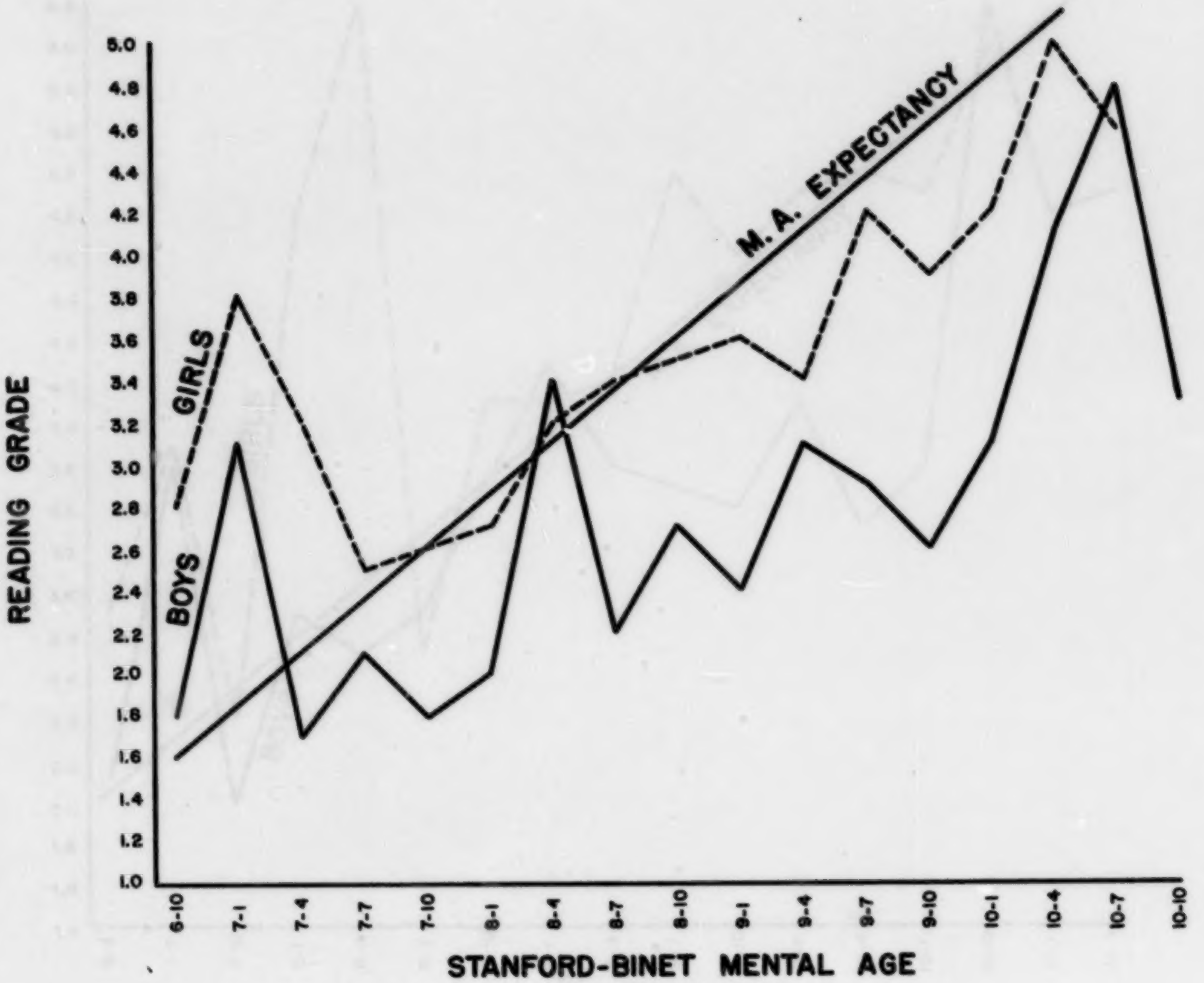

FIGURE I

MEDIAN READING ACHIEVEMENT IN JANUARY 1958 COMPARED WITH MENTAL AGE READING EXPECTANCY

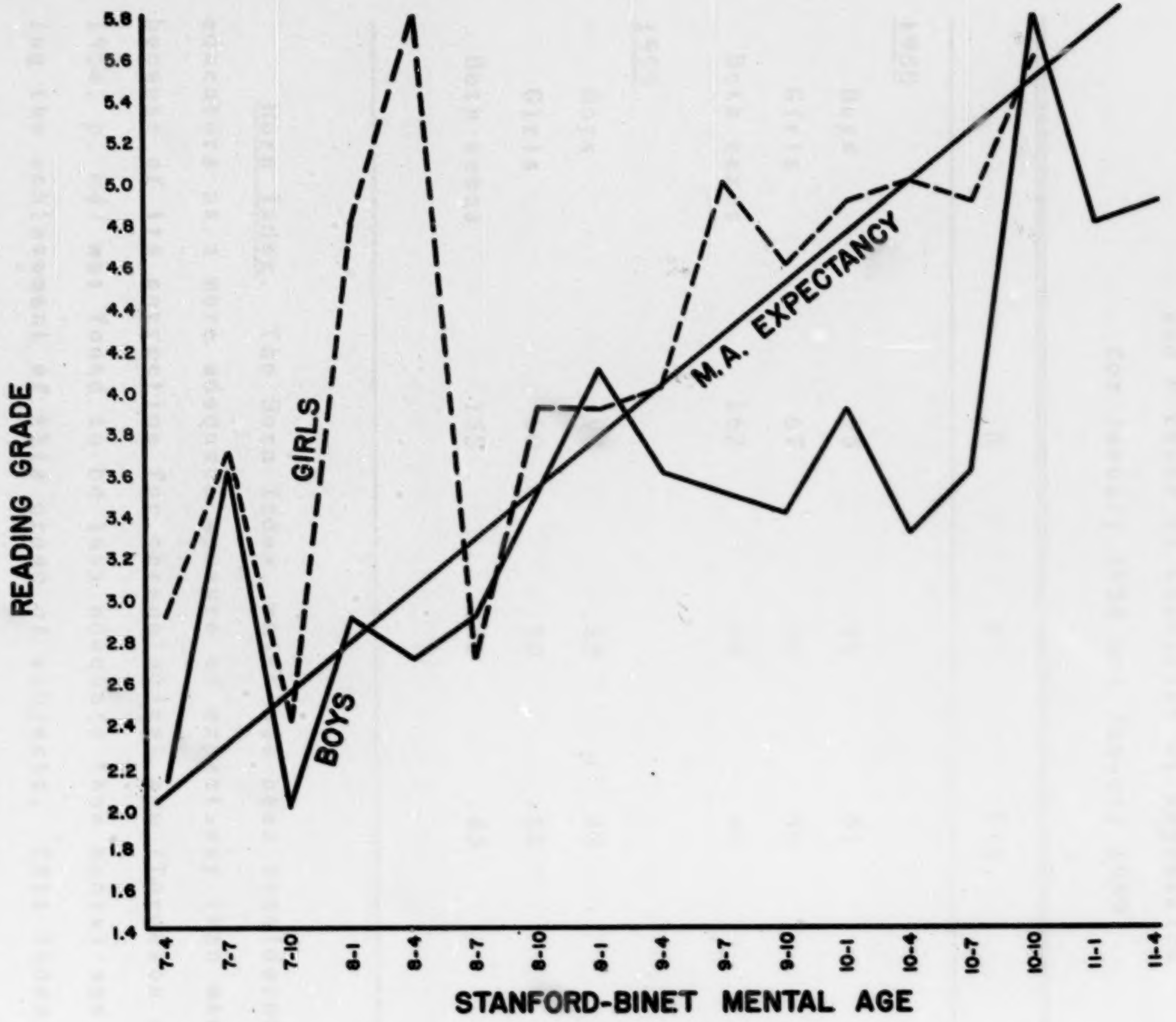

FIGURE 2

MEDIAN READING ACHIEVEMENT IN JANUARY 1959 COMPARED WITH MENTAL AGE READING EXPECTANCY

Table 37

Pearson Product-Moment Correlation Co-efficients and Correlation Ratios Between Mental Age Reading Expectancy Grades and Reading Achievement Grades, and F Tests of Linearity of Regression for January 1958 and January 1959

	N	r	Eta	F
1958				
Boys	95	.38	.51	1.92
Girls	67	.36	.46	1.02
Both sexes	162	.33	.43	2.04
1959				
Boys	95	.35	.48	1.72
Girls	60	.50	.53	.37
Both sexes	155	.36	.45	1.91

Horn Index. The Horn Index, which has been considered by some educators as a more adequate measure of expectancy than mental age because of its correction for chronological age (Torgeson and Adams, 1954, p. 84) was found to be less adequate than mental age in predicting the achievement of this group of subjects. This index is based on the reasoning that a child of 13 with a mental age of eight cannot be considered on the same basis as an eight-year-old child with a mental age of eight years. Following this logic, Horn (1941) developed a set of formulas that would correct for chronological age on a differential basis, that is, with differing weights accorded to chronological age as the child grows older.

When mean expectancy grades based on the Horn Index[1] were compared to mean actual achievement grades, it was found that both sexes had achieved below expectancy both at the beginning and end of the experiment. As can be seen in Table 38, the expected mean reading level for boys according to the Horn Index was 4.99 and for girls 4.83 in 1958. Thus, at the beginning of the experiment the boys were achieving 22.4 months below expectancy and at the end of the experiment 20 months below expectancy. The below expectancy achievement for the girls was 15 months at the beginning of the experiment and 9.7 months at the end. These discrepancies were wider than those found when actual achievement was measured against mental age expectancy.

The correlations between Horn expectancy reading level and actual reading achievement, while significant, were lower than the correlations between mental age expectancy and actual achievement, thus adding further evidence that the Horn Index was less adequate than mental age as a predictor of reading achievement. For the boys, the correlation between achievement and Horn expectancy was .33 at the beginning of the experiment and .31 at the end of the year; for the girls, this correlation was .30 at the beginning and .46 at the end.

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[1] The Horn Index formula for the age group represented in this study was $\frac{3MA + CA}{4}$.

Table 38

Means, Standard Deviations and Standard Errors of the Means of Horn Reading Expectancy Grades in January 1958 and January 1959

	N	M	SD	SEM
January 1958				
Boys	95	4.99	.71	.07
Girls	67	4.83	.77	.09
Both sexes	162	4.93	.78	.06
January 1959				
Boys	95	5.56	.79	.08
Girls	60	5.34	.77	.10
Both sexes	155	5.48	.76	.06

Table 39

Pearson Product-Moment Correlation Co-efficients Between Horn Reading Expectancy Grades and Reading Achievement Grades, and the Significance of the Difference Between the Correlations Obtained in January 1958 and January 1959

GROUP	JANUARY 1958 N	JANUARY 1958 r	JANUARY 1959 N	JANUARY 1959 r	z	P
Boys	95	.33	95	.31	.15	.88
Girls	67	.30	60	.46	1.03	.30
Both sexes	162	.26	155	.31	.48	.63

These relationships are presented in Table 39. As was true of the mental age measure, a closer correspondence between achievement and Horn expectancy existed for girls than for boys.

The comparison of the correlation co-efficient and the correlation ratio for the entire group in 1958 revealed a curvilinear relationship between expected achievement based on the Horn Index and actual achievement. As can be seen from Table 40, this relationship became linear after a year of emphasized reading instruction.

Although the correspondence between Horn expectancy and actual achievement improved after a year of progress in reading, the correlations were still too low to indicate the adequacy of the Horn Index as a measure of expected achievement for this group of mentally retarded pupils.

Table 40

Pearson Product-Moment Correlation Co-efficients and Correlation Ratios Between Horn Reading Expectancy Grades and Reading Achievement Grades, and F Tests of Linearity of Regression for January 1958 and January 1959

	N	r	Eta	F
1958				
Boys	95	.33	.44	1.52
Girls	67	.30	.43	1.39
Both sexes	162	.26	.41	3.10[a]
1959				
Boys	95	.31	.31	.69
Girls	60	.46	.52	.85
Both sexes	155	.31	.39	1.73

[a] Significant at the one per cent level.

Comparative Study of High and Low Achievers

A first step in studying the relationship of reading achievement and reading progress to background factors was the establishment of high- and low-achievement groups. In setting up these two groups it was necessary to employ an operational definition of reading expectancy, since the existing criteria, mental age and the Horn Index, failed to offer an adequate measure of expectancy for this group. The operational measure was based on the Stanford-Binet IQ and the initial reading score; and since the girls achieved significantly higher than the boys,[1] high and low achievers were determined separately for each sex. According to this operational definition, the population of each sex was divided into three IQ groups with ranges of 10 points (i.e., IQ ranges of 50 to 59, 60 to 69, and 70 to 79); and the high and low achievers for each sex were identified as those pupils whose reading scores fell within the upper and lower 10 per cent, respectively, of each IQ group. By this method, 10 boys were selected as high achievers and eight as low achievers from among the 95 boys in the total population at the beginning of the experiment.[2] There were six girls in each of the high- and low-achieving groups from among the 67 girls.

Progress and Achievement

The relationship of reading progress to achievement was examined by a comparison of high and low achievers with the question: Do high achievers differ from low achievers in reading progress during the study? Comparisons were made on the basis of the three intervals of the experiment as well as for the full year, and the progress of girls was compared to that of boys.

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[1] Median achievement for the girls was 3.7 grade and for boys 2.6 grade at the beginning of the experiment.

[2] The disparity in numbers between high and low achievers among the boys was due to the way in which their reading scores were grouped.

The relationship between progress and achievement would appear to be negative when progress is considered for the full year without differentiating boys and girls. According to Table 41, both high and low achievers showed approximately ten months progress during the entire period of the experiment.

Table 41

Comparison of Median Reading Progress in Months

Between High and Low Achievers

During Four Time Intervals

N = 30

TIME INTERVALS	HIGH ACHIEVERS			LOW ACHIEVERS		
	BOYS N=10	GIRLS N=6	BOTH N=16	BOYS N=8	GIRLS N=6	BOTH N=14
Jan.'58 to Jun.'58	.5	-2	-.5	5	7	7
Jun.'58 to Sept.'58	9.5	5	7.5	0	1	0
Sept.'58 to Jan.'59	6.5	1	6	1.5	3.5	2
Jan.'58 to Jan.'59	12	6.5	10.5	5	11.5	10

When progress is viewed by intervals, however, important differences in progress are apparent between high and low achievers. The high achievers made no progress during the first six months of the experiment, while the low achievers grew seven months. Thus, the high achievers made their poorest showing during this period, while the low achievers attained most of their growth during this period. During the summer interval when no formal reading instruction was given, the high achievers grew seven and one-half months, while the low achievers showed no gain. Apparently the high achievers were able to consolidate and extend their knowledge of reading during the summer hiatus, while the low achievers were unable to progress without instruction. The high achievers made greater progress during the last period of the experiment so that composite growth for both groups was the same at the end of the year.

There are sex differences in progress during the three periods of the experiment in each of the two achievement groups. Boys made considerably more progress than girls among the high achievers, whereas among the low achievers the reverse picture was evident. This seeming discrepancy in sex differences is likely a function of differences in initial achievement. That is, the high-achieving girls had a significantly higher reading level than the boys in their group at the beginning of the experiment and thus were probably approaching their maximum capacity with consequently less potential for growth than was possible for the boys. Among the low achievers there was ample potential for growth by both sexes, since this group included those who were lowest in achievement according to their capacity.

Background Factors

Various physical, intellectual, familial and educational characteristics were considered in a comparison of high and low achievers in reading to help answer the question: What background factors distinguish between high and low achievers in reading?

Physical Factors.

Among the various physical characteristics investigated, only sex and race showed a difference between high and low achievers. The other characteristics tested which did not distinguish between the achievement groups were age, handedness and speech. A summary of these results is presented in Table 42.

The question of sex differences in achievement was answered in favor of the girls. When the average achievement scores of boys and girls were compared in both high- and low-achieving groups, the girls were found to be eight months superior to the boys in the high-achieving group and nine months superior in the low-achieving group. The girls continued to maintain their superiority when differences in achievement were considered at the end of the experiment.

Some changes did occur, however, in the picture of sex differences in achievement after a year of emphasized reading instruction. As can be seen from Table 42, the high-achieving boys narrowed their distance from the girls from eight months to two months, while the low-achieving girls increased their superiority to the low-achieving boys from nine months to one year and one month. These changes were explained previously under Progress and Achievement by the likelihood that the high-achieving girls were reaching the limit of their capacity, while among the low achievers there was much room for improvement in both sexes.

Table 42

Age, Race, Handedness, and Speech Defects of High and Low Achievers in Reading

N = 30

PHYSICAL CHARACTERISTICS	HIGH ACHIEVERS BOYS N=10	HIGH ACHIEVERS GIRLS N=6	HIGH ACHIEVERS BOTH N=16	LOW ACHIEVERS BOYS N=8	LOW ACHIEVERS GIRLS N=6	LOW ACHIEVERS BOTH N=14
Median Age	13-10	13-4	13-8	13-7	12-11	13-6
Race						
Number of Negroes	7	6	13	4	2	6
Number of whites	3	0	3	4	4	8
Handedness						
Left	2	0	2	1	0	1
Right	8	6	14	7	6	13
Speech Defects						
No Problem	3	3	6	1	2	3
Mild	6	3	9	6	4	10
Severe	1	0	1	1	0	1
Average Achievement						
January 1958	4.4	5.2	4.7	1.2	2.1	1.6
January 1959	5.6	5.8	5.7	2.1	3.2	2.6

As can be seen from Table 42, the question of racial differences in achievement was answered in favor of Negroes. Of the total of 16 high achievers 13 were Negroes, whereas there were only six Negroes in the total of 14 low achievers. When these figures are converted to percentages and compared to the percentage of Negroes in the study population, the importance of these results is highlighted. Thus, 81 per cent of the high achievers and 43 per cent of the low achievers were Negroes in the context of Negro representation in the total population of 62 per cent. In addition, all of the high-achieving girls were Negro, whereas only 33 per cent of the low-achieving girls were Negro. These percentages for the girls are particularly significant in light of the fact that Negroes comprised 65 per cent of the population of girls.

Intellectual Factors. In the comparison of high and low achievers on three intellectual measures, only the Lorge-Thorndike Nonverbal Test showed a significant difference between the two achievement groups. As is evident on Table 43, the median Stanford-Binet IQ's were identical for both high and low achievers, and the median IQ scores of the H-T-P also failed to discriminate between these two groups. On the Lorge-Thorndike, however, the high achievers were 15 points higher than the low achievers, and a sex difference in favor of the girls was evident. The Chi-square of 10.76 for differences between high and low achievers was significant at the one per cent level. The Chi-square of 10.67 for differences between boys and girls in the high-achieving groups was also significant at the one per cent level, and the Chi-square of 4.67 for differences between low-achieving boys and girls was significant at the five per cent level.

Table 43

Median IQ's on Stanford-Binet, Lorge-Thorndike and H-T-P,
and Median Differences of H-T-P Scores
of High and Low Achievers in Reading
N = 30

MEDIAN IQ AND DIFFERENCE MEASURES	HIGH ACHIEVERS			LOW ACHIEVERS		
	BOYS N=10	GIRLS N=6	BOTH N=16	BOYS N=8	GIRLS N=6	BOTH N=14
Stanford-Binet IQ	67.5	70	68.5	69	66.5	67.5
Lorge-Thorndike IQ	78	82	79.5	57	69.5	64.5
H-T-P IQ	89	90.5	89.5	73	92	82
Raw G Score minus Net Weighted Score	-3	-2.5	-3	-3.5	-2	-2
"Good" Score minus "Flaw" Score	10	8	9.5	11.5	18	12

Thus a high correspondence was found between intelligence and reading achievement when intelligence was measured on a nonverbal basis; and although both sexes are comparable in intelligence on the basis of the Stanford-Binet, when intelligence is measured nonverbally the girls are higher than the boys. It is interesting that no relationship was found between achievement on the highly verbal activity of reading and the highly verbal measure of intelligence represented by the Stanford-Binet.

While no differences between high and low achievers were found on the basis of median H-T-P IQ and difference scores, further analysis of the results yielded some interesting findings. According to Buck (1951), when the Net Weighted score is 15 points or more higher than the Raw G score, the subject is considered to be functioning far below his capacity. Table 43 indicates that the median difference of these scores for the high-achieving group was almost identical with that of the low-achieving group. The same situation existed when the median difference of Good and Flaw scores for each group was examined. These differences were within normal limits and thus indicated that both high and low achievers as groups were socially effective. The median for the low achieving girls was beyond the critical figure of 15 and considerably higher than the median for the high-achieving girls. Thus, the reading level of the low-achieving girls may have been influenced by their poor ability to function socially, however, the numbers were too few to arrive at a definite conclusion.

Familial Factors. Three home factors were investigated to determine their relationship to reading achievement: number of siblings, position in the family, and the presence of parents in the home. Of these three factors, only the presence of both parents in the home was found to show a significant difference between high and low achievers. Table 44 reveals that more than four times the number of high achievers lived with their mothers and fathers as compared to low achievers. The Chi-square of this difference (4.65) is significant at the five per cent level. The average number of siblings was the same for high and low achievers, and position in the family also seems to have little bearing on achievement.

Thus an important familial factor distinguishing between high and low achievers was the presence of both parents in the home. And it

Table 44

Familial Factors of High and Low Achievers in Reading

N = 30

FAMILIAL FACTORS	HIGH ACHIEVERS			LOW ACHIEVERS		
	BOYS N=10	GIRLS N=6	BOTH N=16	BOYS N=8	GIRLS N=6	BOTH N=14
Median No. Siblings	5	3.5	4	2.5	4.5	3.5
Position in Family						
Oldest	4	1	5	2	1	3
Middle	3	3	6	3	4	7
Youngest	3	2	5	2	1	3
Only	0	0	0	1	0	1
Parents						
Both	7	2	9	2	0	2
Mother	0	3	3	5	3	8
Father	3	0	3	1	0	1
Neither	0	1	1	0	3	3

can be inferred, therefore, that reading achievement was positively related to whether the child lived with both parents.

Educational Factors. When high and low achievers were compared on the three educational factors shown on Table 45, a consistent pattern of differences on these three interrelated aspects of special class experience was revealed. The high achievers as a group were almost one and one-half years older than the low achievers when they entered special class. They had a year and a half less special class experience than the low achievers. And the average regular grade last attended before special class assignment was the fourth grade compared to the second grade for low achievers.

Table 45

Educational Factors of High and Low Achievers in Reading

N = 30

EDUCATIONAL FACTORS	HIGH ACHIEVERS			LOW ACHIEVERS		
	BOYS N=10	GIRLS N=6	BOTH N=16	BOYS N=8	GIRLS N=6	BOTH N=14
Median age at entrance to special class	11-6	10-6	10-9	9-4	9-2	9-4
Median number of years in special class	3	4	3.5	5	5	5
Median regular grade last attended	4	4.5	4	2	3	2

These findings suggest on the one hand that the high achievers were not referred to special classes as soon as the low achievers because they were able to achieve better in the early grades; and once transferred, they maintained their superiority over those who had not been able to achieve earlier. On the other hand, perhaps the high achievers attained their superiority over the low achievers because of their longer exposure to regular class instruction with its greater emphasis on academic achievement; whereas the low achievers failed to respond to the special advantages afforded them in special classes.

Table 46

Attitudes Toward Reading Among

High and Low Achievers in Reading

N = 30

ATTITUDES TOWARD READING	HIGH ACHIEVERS			LOW ACHIEVERS		
	BOYS N=10	GIRLS N=6	BOTH N=16	BOYS N=8	GIRLS N=6	BOTH N=14
Interest						
Liked reading	1	2	3	2	2	4
Disliked reading	0	1	1	0	1	1
More time desired	0	0	0	0	0	0
Less time desired	2	1	3	0	0	0
Self-evaluation						
Easy	5	3	8	3	4	7
Difficult	1	1	2	5	1	6
Good enough	8	2	10	4	3	7
Do better	3	1	4	4	4	8

Attitudes Toward Reading. Within the interview administered to all the high and low achievers, a number of questions inquired into their attitudes toward reading. The eight indications of attitude are presented in Table 46. The answers to the first four items on this table were interpreted as an indication of their interest in reading, and the last four items were interpreted as an indication of how realistic they were in evaluating their reading ability. Following is a list of the questions corresponding to the order of their listing on the table and numbered according to the order of their occurrence during the interview:

37. What are some of the things you like best in school?
38. What are some of the things you don't like (in school)?
40. Suppose you could spend more time in school on one of these things: shop (sewing), reading, arithmetic, drawing. Which one would be your first choice?
41. Are there some things you think you spend too much time on in school?
43. What things are easy for you?
44. What things are hard for you?
45. Do you think you read good enough to do most of the things you want to do? Explain.
40a. If you had one wish, if you could do one of these things better (shop or sewing, reading, arithmetic, drawing), which one would it be?

The evidence on the first four items of Table 46 does not suggest either a strong interest or disinterest in reading. Few of the children spontaneously chose reading when asked what subjects they liked or disliked in school. Whether high or low achiever, none of the pupils wanted to spend more time on reading, and three of the high achievers were willing to spend less time!

Answers to the last four items suggest that the low achievers were less consistent and therefore less realistic than the high achievers in evaluating their reading ability. While the low achievers as a group seemed to recognize their difficulty with reading and would like to do better, they also seemed to find reading "easy" and "good enough" for their purposes.

Vocational Choice. To investigate whether achievement is related to vocational goals, each high and low achiever was asked during the interest interview what he would like to do when he grew up and left school. In order to clarify their vocational goals, they were further asked to describe what they would be doing in the vocations mentioned. The same questions were asked again during the speech survey as a check on the consistency of vocational choices. Each vocation was classified as "realistic" or "unrealistic," in relation to the capabilities of educables.

As can be seen from Table 47, both groups tended to be realistic in their vocational choices, but they were not consistent in specifying a particular choice on the two occasions of inquiry. Half or more of high and low achievers made choices within the "realistic" category, twice as many in each group being realistic rather than unrealistic. When asked again, however, less than 40 per cent of the high achievers and less than 25 per cent of the low achievers made the same choice. Thus, no relationship between achievement and realistic vocational choice was indicated, and a high degree of inconsistency of choice was particularly evident among the low achievers.

Table 47

Realistic and Unrealistic Vocational Choices of High and Low Achievers in Reading

N = 30

VOCATIONAL CHOICE	HIGH ACHIEVERS BOYS N=10	HIGH ACHIEVERS GIRLS N=6	HIGH ACHIEVERS BOTH N=16	LOW ACHIEVERS BOYS N=8	LOW ACHIEVERS GIRLS N=6	LOW ACHIEVERS BOTH N=14
Realistic						
Factory Worker	0	2	2	0	1	1
Armed Service	2	0	2	0	0	0
Sports	2	0	2	0	0	0
Farm Worker	1	0	1	0	0	0
Five and Ten Store Clerk	0	0	0	0	1	1
Housework	0	0	0	0	1	1
Truckdriver	0	0	0	2	0	2
Musician (drummer)	0	0	0	1	0	1
Coal Miner	0	0	0	1	0	1
Gas Station Attendant	0	0	0	1	0	1
Boat Builder	0	0	0	1	0	1
Nurse's Aid	0	1	1	0	0	0
Total Realistic Choices	5	3	8	6	3	9
Unrealistic						
Registered Nurse	0	2	2	0	0	0
Beautician	0	1	1	0	0	0
College Study	1	0	1	0	0	0
Secretary	0	0	0	0	3	3
High School Study	0	0	0	1	0	1
West Point Study	0	0	0	1	0	1
Total Unrealistic Choices	1	3	4	2	3	5
Unspecified						
(Don't Know Reponses)	4	0	4	0	0	0

CHAPTER IV

SUMMARY AND DISCUSSION

In the past few years increasing attention has been focused on the education of the mentally retarded. It is necessary to know what they can be taught, how much can be expected of them, and what factors influence their learning. This study has value for teachers and supervisors in the field of special education, because it is pioneer research concerned with the answers to these questions about the reading of the mentally retarded.

Summary of the Experiment

As the project was originally planned, it was expected that methods would be developed to be used in teaching educable adolescents who had not learned to read. Screening more than 400 subjects produced so few that qualified as non-readers that a change in design was essential. An important part of the project then became a study of the reading progress of educable adolescents. It was decided to investigate whether achievement in reading could be increased if reading were emphasized at a time when these retarded pupils were approaching the end of their school career. Generally there is little stress placed on reading in special classes for educable adolescents. Hildreth (1936, p. 292), however, has suggested that the mentally subnormal usually are not ready mentally to profit from learning in the academic sense until they near school-leaving age.

The experiment was designed to emphasize reading through the experience-method approach which makes use of pupils' interests and experience in a practical and meaningful way throughout the school day. This approach, planned to meet the particular needs of the mentally retarded in real life situations, was recommended by Wieda (1951). She suggested that a functional program would tend to elevate their reading level by developing interesting stories around real needs such as menus, recipes, market lists, and money order forms. A similar approach has been supported by Bond (1948, p. 28) who reported that children of really limited intelligence are unlikely ever to read very much except for practical purposes and, therefore, should have training primarily in extremely practical kinds of reading.

Fifteen special classes for mentally retarded adolescents were selected for the experiment. All teachers were asked to keep daily records of reading activities and to assist in testing procedures. Teachers of ten of the classes were oriented to emphasize reading through an experience-method program. These teachers received regular supervision of their use of experience methods. The five teachers in the control group were asked to continue their usual program of instruction and had no supervision of their work.

Again the design had to be altered since the results were influenced by certain unavoidable factors that became evident as the experiment progressed. For example, both the school administrators and the teachers knew the study was an experiment in reading so that pressures to stress reading, both direct and subtle, were placed on the control group. Keeping a daily record of reading activities by the control group in order to permit a comparison of reading activities in both groups made the control teachers more conscious of teaching reading, and it was found that some of them were stressing reading as much as the experimental group. The periodic testing of the subjects in the control classes in order to compare their progress and achievement with the experimental classes automatically placed emphasis on reading.

Thus, the project became action research instead of a controlled experiment. The teachers in both the experimental and control groups were stressing reading more than they were accustomed; and some were more imaginative and successful using the experience method than others. In order to evaluate the results, it was necessary to reclassify the teachers on the basis of classroom observations, analysis of teacher daily records, and conferences with the teachers, as follows:

1. Experience: those who were definitely using the experience method in their approach to reading.
2. Traditional: those who used a very formal approach with a regular assigned period, basal text, and little or no relation of reading to the rest of the school program.
3. Semi-Experience: those who did not consistently follow either method of teaching reading, but made partial use of experience techniques and were more variable in method than is characteristic of a traditional approach.

The project in its eventual form was concerned with three general areas of investigation: (1) reading achievement and progress, (2) levels of expectancy in reading, and (3) background factors of possible effect on both achievement and progress. The group of subjects as a whole was studied to inquire into the relationship between emphasis on reading and reading progress during the experimental year. The three experimental groups (Experience, Semi-Experience, and Traditional) were compared to investigate whether the experience method was superior to the traditional method for teaching reading to educables. In addition, currently used measures of expectancy were investigated for their adequacy in evaluating the findings and for general use with educables. And finally, various background factors were studied for their effect on reading achievement and progress.

Findings Related to Progress in Reading

Progress and Emphasis. An analysis of the final results after one year's emphasis in teaching reading, from January 1958 to January 1959, indicated that educable adolescents can profit from a definite emphasis on reading. Compared with progress expected according to the kinds of grade norms on standardized tests, the progress of the study sample was one month higher. Compared with a similar group of educable adolescents who had not experienced a year of emphasis in reading, the progress of the study sample was significantly higher. From the evidence of progress through emphasis, it can be concluded that reading should be stressed considerably more than it is in the average special class for educable adolescents at the present time. This finding is of particular importance to teachers and supervisors responsible for planning school programs for these children.

Progress and Method. In the analysis of progress according to method, the data failed to show that the experience method, as used in the experiment, is superior to the traditional method of teaching reading. Both the Experience and Traditional methods group showed comparable progress, while the Semi-Experience Group made less progress than either of the other two groups. Certainly there are limitations to an experiment in methods because of the difficulties in maintaining controls: there are individual differences among teachers, and one year is not enough time for a teacher to become sufficiently acquainted with a method to become truly adept with it. Nevertheless, from the data gathered it was not the particular method of teaching that seemed to bring about greater achievement in reading. The low progress in the Semi-Experience classes suggests some relationship between pupils' progress and the teacher's consistency and understanding of the particular method she employs.

Further Analysis of Progress Results. Some leads were obtained from the scheduled interviews with teachers as to the reasons for progress through emphasis rather than method. Teachers in all the methods groups stated that the study made them more conscious of what they were teaching, caused them to plan better, and forced them to evaluate their results. Whereas special class teachers often complain that they are isolated and segregated from the rest of the school and have little status, the teachers in the experiment came to feel important and were determined, therefore, to do a superior job.

The reaction of the subjects themselves bore out the importance of stress on reading. In many cases children in special classes are "forgotten" children in terms of the rest of the school. Little is expected of them, and the nature of their program makes them feel different and inferior to the other pupils. The children in the project knew they had been singled out, and their positive response to the project personnel suggests that there was therapeutic value in their realization that there were people who were not only interested in them but also interested in helping them to achieve.

Findings Related to Expectancy

In order to evaluate the reading achievement attained in the study it was important to know what level of reading achievement educables can be expected to reach. The two most widely used measures of expectancy were applied to the data, namely, mental age and the Horn Index. Questions about the adequacy of these measures for use with the educable retarded were explored.

Mental Age Expectancy. A review of the literature indicated that most authorities recommend using mental age, particularly that obtained from the Binet Test, as the predictor of reading achievement. Kirk (1940, p. 28) reported that the MA is not a "perfect indicator" of the reading capacity but is probably the best single indicator of capacity we now have. He stated (1951, p. 254) that "on the whole, mentally handicapped children learn to read up to their MA reading grade expectancy, as do children of normal or superior intelligence . . . (and) all other factors being equal, the MA is the best known measure of reading grade expectancy." Tinker (1952, p. 41) asserted that it is generally agreed that the best prediction of the ability to learn to read derived from an intelligence test is obtained by the Binet test. After she surveyed the literature, Robinson (1946, p. 73) concluded that the Binet test, supplemented by a performance and nonverbal test, gives the best estimate of reading expectancy, the MA being more significant than the IQ. Gates (1949, p. 78) suggested that the Stanford-Binet is widely recognized as an excellent test of a pupil's ability to learn to read. Gray (1956, pp. 301-336) concluded that expectation should be as great for slow as for bright pupils of comparable mental ages.

Because of the high agreement among authorities that the MA is the best measure of expectancy, the reading achievement scores of the study population were compared with their expected scores based on the MA's derived from the Stanford-Binet test. In order to measure the effectiveness of the experiment in teaching reading, it was essential to know how well the subjects were reading in relation to their expectancy. It was found that the mean achievement of the study group did not come up to the higher mean achievement level predicted by the MA even after one year of emphasis in reading. Correlations of .33 at the beginning of the experiment and .36 at the end between mental age expectancy grades and actual reading grades were found to be lower than the .50 to .65 reported by Morphett and Washburne (1931, pp. 496-503), or the .56 to .65 offered by Munroe (1932, p. 10), or the .80 between Binet IQ and reading reported by Hildreth (1936, p. 298). These correlation studies in the literature were made on children in regular classes with a wide range of ability and excluding the mentally retarded.

While mental age may be a reasonable predictor of expectancy for groups with a wide IQ spread, such as are found in regular grades, the same inference cannot be made when mental age is applied to a small IQ range (50 to 79) for less than 10 per cent of the population (Terman and Merrill, 1937, p. 37). According to Walker (1943, p. 257), when the extreme cases are removed from a sample, correlation co-efficients are valid for the group studied, but cannot be considered applicable to that portion of the population not represented in the sample. Thus, although a positive relationship exists between the MA expected achievement and actual achievement, it cannot be considered adequate for predicting achievement for individual mentally retarded children. This finding should be of major importance to those in the field of special education who are now using the mental age to evaluate a child's reading efficiency.

Horn Index Expectancy. The Horn Index, which is based on mental age with a correction for chronological age, has been considered by some authorities as more adequate than mental age alone as a measure of expectancy. This index was found to be less adequate, however, than the mental age criterion. When the Horn Index was applied to the group of subjects under study, it was found that the mean expected reading achievement was even higher than that predicted by mental age. Also, the correlations between Horn expectancy grades and achievement grades of .26 and .31 at the beginning and end of the experiment, respectively, were lower than those for mental age correlated with achievement. Therefore, the relationship between Horn Index expectancy and achievement was not considered sufficiently reliable to be an adequate predictor of reading achievement for educables.

Evaluation of Achievement. In the absence of an adequate measure of expectancy for educables, the achievement of the subjects was compared with the achievement of similar subjects not in the experiment and also with the achievement expected by authorities as reported in the literature. At the end of the study the median reading grade was 3.7 which was significantly higher than the 2.9 median grade of the nonstudy group. How did this compare with expected achievement reported by authorities? Witty and Kopel (1936, p. 227) asserted that morons (50 to 70 IQ range) rarely achieve better than fourth grade proficiency.

The majority of the mentally handicapped at 15 or 16 years of age do not achieve beyond third, fourth, or fifth grade standards according to Ingram (1953, p. 6). Sister Mary Justa (1954, pp. 11-15) stated that children with an IQ of 50 to 60 can be expected to read on a first or second grade level by the age of 14 or 15, those with an IQ of 60 to 70 can be expected to read on a third or fourth grade level, and those with an IQ from 70 to 80 can be expected to reach fifth or sixth grade ability. At age 16 with a Stanford-Binet IQ of 70, Brueckner and Bond (1955, p. 187) indicated that the expected reading grade under average instruction should be 4.8 and under superior instruction 5.2. In general, the results of the experiment seem to confirm the achievement level expected by most authorities, namely, approximately a fourth grade level for adolescents with a median IQ of 68.

Possibly another year of emphasis on reading might produce a higher achievement level, but any further achievement is questionable for educable adolescents who are expected to reach their maximum sooner than normal children. The level they did reach occurred after emphasis on reading for an entire year. The achievement of the non-study group who did not receive emphasis on reading was significantly lower. It is reasonable to conclude, therefore, that without emphasis educable adolescents will not read near their capacity. It would seem further that the period of adolescence is a favorable time for stressing reading because of the practical needs and special motivations of educables at this time which is just prior to their leaving school and assuming vocational and other adult responsibilities.

Sex Differences. Evidence from the literature generally reflects a sex difference in reading achievement in favor of girls in the elementary grades. Samuels (1943, pp. 594-603) found a statistically reliable difference in favor of the girls in a series of reading tests administered to children in grades one through five. On the Iowa Every Pupil Tests of Basic Skills, Stroud (1948, pp. 657-667) found that girls were significantly higher in reading achievement than boys in grades three through eight. Carrol (1948, pp. 370-375) claimed that girls excel over boys on reading readiness tests as well as on tests of reading achievement. Other evidence corroborating the reading superiority of girls could be cited.

The evidence from the present study indicates that a sex difference in favor of girls exists among retarded children as well as among normal children. Initial testing revealed that the reading achievement of the girls was significantly higher than that of boys. The educable girls read about one year above the level of the educable boys, and throughout the experiment they maintained a significant lead in achievement over boys. In only one instance did there appear to be a sex difference in favor of boys, and this difference occurred when the high-achieving boys were compared to high-achieving girls in the amount of progress in reading occurring during the experiment. This difference seemed to be explained by the likelihood that the high-achieving girls were nearing their maximal achievement while the high achieving boys still had considerable room for growth because of their generally lower achievement level compared to the girls.

Despite the general acceptance of girls' reading superiority over boys among normal children, none of the standarized tests and neither of the currently used measures of expectancy make provisions for a sex difference. With regard to expectancy for educables in relation to this sex difference, both mental age and the Horn Index seemed to predict the reading achievement level of girls better than of boys. The correlations between expectancy grades and achievement grades for both these measures were higher for girls than for boys in the study group. It would seem highly reasonable, therefore, on the basis of the literature and the present findings to assume that the larger proportion of reading difficulties found among normal and retarded boys is partly the result of their being measured against scales that do not take into account their reading inferiority as a sex group compared to girls.

It can be concluded from the present findings that educators in the area of special education need to consider more carefully the matter of sex differences in reading ability when planning the curriculum and evaluating the achievement and progress of educable boys and girls. The acceptance of sex differences in reading achievement seems more realistic than attempts to remove or to disregard them.

Findings Related to Background Factors

A wide variety of background factors were studied in relation to reading progress and achievement. These factors included various physical, intellectual, familial, educational, teacher, community, and attitude characteristics. More background factors were found to be associated with reading achievement than with progress.

Background Factors and Progress. The teacher characteristic factor found to be related to reading progress was the teacher's ability to estimate the reading level of pupils. There was a significant difference between the teachers' estimates of boys' reading achievement compared to the boys' actual reading achievement, the data indicating that teachers tended to overestimate the reading level of the boys. The teachers were more realistic in estimating the reading level of girls, although they tended somewhat to underestimate the girls' reading achievement. Any conclusions from this finding must be tentative, since estimates from all the teachers were available for only the first half of the experiment.

One factor was found to be releated to progress in reading, namely, handedness. Although the results were not conclusive, right-handed children showed more progress than left-handed children. The literature fails to offer evidence about the relationship between progress and handedness to compare with this finding, and no conclusions were drawn since the results were largely suggestive.

Background Factors and Achievement. The two physical factors found to be significantly related to achievement were sex and race. The evidence and implications of a sex difference in achievement have already been discussed in the previous section on Sex Differences under Findings Related to Expectancy. It can be said further on this topic that the high-achieving girls were significantly above the high-achieving boys in reading grade level. The other physical factor distinguishing high and low achievers was the racial superiority of Negroes in this group over the white subjects. The percentage of high-achieving Negroes compared to white subjects was well beyond the percentage that would be expected from the percentage of Negroes in the study. The representation of other races in the study group was too slight to permit comparisons. The finding of Negro superiority within this group could be explained on the basis that these Negro children are functioning on a retarded level because their potential has remained undeveloped from lack of cultural stimulation. Many of them had recently emigrated from the South where conditions of cultural deprivation were even poorer than their present environment. While the study group as a whole came from a low socio-economic community, the Negroes seemed to be at the greatest disadvantage culturally. While the present findings are insufficient to relate to the broad question of social class related to achievement, they do raise a general question about educational values and achievement at different socio-economic levels in our population.

The one intellectual factor found to be positively related to achievement was the nonverbal measure of intelligence based on the Lorge-Thorndike test. The high achievers scored significantly higher in nonverbal intelligence than the low achievers. Since most of the high achievers were Negro, the suggestion made about the effect of cultural environment upon their functioning as opposed to the hereditary basis of their retardation would seem to be supported. Kirk (1951, p. 33) has also speculated about a casual relationship between low mental functioning and low socio-economic and educational factors.

Among the familial factors, only the presence of both parents in the home seemed to bear a relationship to achievement. From the data it would appear that those educables who live with both parents achieve higher than those who live with only one of either parents. It can be concluded from this finding that stability of the home is conducive to reading achievement, and conversely, that the absence of either parent has a negative effect on reading achievement.

A complex of interrelated educational factors, including age of entrance into special class, number of years in special class, and number of years in regular class, showed a relationship to reading achievement. The high achievers entered into special class at an older age, spent fewer years in special class, and had more years in regular class. This finding could be interpreted as indicating that the high achievers were probably doing adequate work in the lower grades and thus delayed their entrance into special class. And once they were in special class, they continued their superiority over those who had gone to special class earlier. Their longer regular class experience was further interpreted as possibly affording more emphasis on reading achievement than is usually the case in special classes. The low achievers, on the other hand, perhaps failed to respond to the special advantages of the special class. The question is raised: Do special class teachers perhaps expect too little from educables? The results on emphasis and progress indicate that educables can gain in reading proficiency under conditions of emphasis which imply some expectation of learning.

Highlights of the Findings

Among the large mass of data that was examined in the study, certain of the results seemed more important in their implications than others for supervisors, teachers and educators concerned with special education for educable adolescents. The more basic results can be summarized as follows:

1. Emphasis in reading resulted in progress in reading among educable adolescents well beyond the progress occurring without emphasis.
2. It was the emphasis itself that seemed important to progress, not the particular methods (as used in this study) through which emphasis was applied.
3. While the experience method (as used in this study) would seem to offer special advantages for teaching reading to educables, the traditional method proved equally effective in producing progress.
4. Emphasis in reading through a well-defined method and clear-cut goals seemed more important to progress than the particular method employed. Those classes made less progress whose teachers were inconsistent and variable in their techniques.
5. Currently used measures of expectancy, namely, mental age and the Horn Index, were inadequate for predicting the reading achievement of the study group.
6. Sex differences in reading ability existed among these educables with girls achieving higher than the boys by approximately one year both at the beginning and the end of the experiment.
7. Background factors explored in the study did not prove to be very significant to reading progress during the experimental year but did show a number of relationships to reading

achievement. Those factors which distinguished between high and low achievers were as follows:

a) Physical: The high-achieving girls were significantly above the high-achieving boys in reading grade level. There were more Negroes among the high-achievers of both sexes than white subjects, the percentage of high-achieving Negroes being well beyond expectancy based on their representation in the study.

b) Intellectual: High achievers of both sexes were higher in nonverbal intelligence than the low achievers.

c) Familial: More high achievers had both parents in the home than low achievers.

d) Educational: The high achievers entered special class at an older age, had fewer years in special class, and had more regular class experience than the low achievers.

8. While interest in reading bore no relationship to achievement, it was interesting that both high and low achievers failed to express any special interest in reading. Apparently, reading was not an important activity to these educables.

9. Both high and low achievers tended to be realistic in their vocational preferences but when asked about work choices on two different occasions, they were not consistent in specifying a particular choice.

Implications

Perhaps the most important implication that can be drawn from this study is that teachers and supervisors in special education should raise their sights when planning a program for educable adolescents. The evidence that these educables were able to profit from emphasis on reading indicates that they are capable of higher achievement when a program is instituted to raise their achievement level. In the present instance, the reading level was improved, and the question is raised: Could more be expected of educables in other academic areas with appropriate emphasis?

The fact that progress occurred with emphasis through two widely different methods indicated that emphasis was the important element in progress rather than method. Thus, teachers and supervisors in special education may very well concentrate on emphasis rather than method when planning programs for educables.

The finding that those teachers who had no well-defined method and variable techniques produced less progress than either of the groups who used the experience or traditional approach suggests that emphasis through a method that is well understood by the teacher and consistently applied is an important factor in the amount of progress that occurs. This result has important implications for the supervisor who may favor a particular method and attempt to impose it upon a teacher who is not familiar with it and perhaps not suited to it. Educators concerned with teacher training may want to evaluate courses in methods of teaching reading in the light of this evidence.

The definite indication of a sex difference in reading achievement favoring girls over boys has implications for teachers and supervisors, as well as test constructors. The consistently higher achievement of the girls suggests that teachers and supervisors should use different standards of achievement in evaluating the reading level of girls and boys and in setting up goals for progress. The provision of separate norms for each sex on reading tests would not only be the recognition of an existing condition, but it would also serve as a more realistic guide to teachers in evaluating reading test results.

The problem of sex differences is intimately related to another problem in evaluating the reading achievement of educables, namely, the adequacy of current measures of reading expectancy. Both the mental age criterion and the Horn Index were found to be inadequate in predicting the achievement of educables. The application of these measures which are based on normal children failed to produce expectancy scores in line with the actual achievement of the group. There was a definite relationship between actual achievement and expected achievement on the basis of these indices, particularly for the girls. These measures were not, however, considered to be useful in predicting for the individual child. Perhaps with some correction one of these measures could be made more adequate for use with educables. The important implication here would appear to be the inadvisability of applying to the retarded a measure that is based on normal children and seems adequate for use with them.

The relative unimportance of background factors in progress is another important point for teachers. In the wide variety of physical, intellectual, familial, educational, teacher and community factors tested, only handedness and the teachers' ability to estimate progress bore any relationship to progress. Certain background factors that involved school movement, amount of absence in the early grades, and adequate medical data could not be explored because school records were incomplete or lacking in this information. In both cases where the findings were significant, the data were not conclusive. It is inferred, therefore, on the basis of the factors studied that progress can take place under conditions of emphasis despite differing background characteristics among educable adolescents.

Background factors were somewhat more a part of the picture in reading achievement. More evidence is certainly needed, but the following factors seemed to have a positive effect on reading achievement: sex, nonverbal intelligence (based on the Lorge-Thorndike), presence of both parents in the home, and the complex of educational factors involving later entrance into special class and more regular class experience. The implications of superiority in reading has already been discussed. The positive relationship between achievement and nonverbal intelligence suggests that teachers may find the Lorge-Thorndike useful as a means of discovering those children who are achieving at or near their capacity and those who are achieving beneath it regardless of the reading level they have attained. Teachers may also better understand and therefore be more effective with the low-achieving child whose parents are not both in the home knowing the relationship between achievement and stability of the home. The factors involved in special and regular class experience may bear some relationship to the point that teachers and supervisors in special education may not expect enough of educables on the level of academic achievement.

In line with the thinking of other educators, the results indicate that reading is not an important leisure time activity for educables. Neither the high or low achievers spontaneously chose reading as a preferred activity. It can be inferred,therefore, that reading should be stressed for practical purposes with these educables rather than as a source of pleasure.

The finding that these educables were generally realistic but not particularly consistent in their vocational choices has implications for the vocational guidance of educable adolescents. Thus, educables would seem to need more guidance in specifying a particular line of work rather than in making a choice within the limits of their capabilities.

Some further inferences would seem to be in order based on observations of the status of special classes made during the course of the study. Not only do the pupils in special classes often feel like "forgotten" children and segregated from the main stream of school activity, but some of the teachers themselves expressed feelings of inferior status as special class teachers. Pupil morale was noticeably higher in those classes where the teachers had taken steps to integrate the educables into school activities that do not usually include the retarded, such as, assembly programs, track, school patrol, and others. In schools where this kind of integration was accomplished, the status of the teachers was noticeably higher among the other school personnel. It would seem, therefore, that both pupils and teachers benefit from a closer integration with other school activities. Contact with the project teachers indicated also that their satisfaction in their work seemed to be an important factor in their effectiveness as teachers. A trend toward a relationship between work satisfaction as indicated in the teacher interviews and progress lends some support to this inference. One rather pervasive comment expressed in the teacher interviews was the absence of experience with the retarded during their academic training. Since none of these teachers had undergraduate training in special education, many of them came to special class work with no previous contact with the retarded. Their need for supervision, therefore, was especially acute. These teachers, however, had very little supervision of their work, and because of lack of communication among special class teachers, they were not aware of the activities, material and projects going on in other special classes. Therefore, there would appear to be a definite need for more adequate and regular supervision of teachers in special classes. Supervision would bring about an exchange of information among these teachers and help to introduce some continuity into the program of study and use of materials in special classes.

In conclusion, it is important to stress that further research is needed into all the areas examined in this study. The pioneer nature of this project made the scope of inquiry broad rather than deep. More intensive and controlled investigation is required before definite answers can be given to the many problems existing in special education for educables.

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APPENDICES

APPENDIX A

DISTRIBUTION OF READING GRADES
ON PRELIMINARY SCREENING TEST

Table 1

Distribution of Reading Grades on Preliminary Screening Test[a]

N = 409

READING GRADE	NO. SUBJECTS	READING GRADE	NO. SUBJECTS
.9 or below	3	4.0 - 4.2	30
1.0 - 1.2	3	4.3 - 4.5	44
1.3 - 1.5	10	4.6 - 4.8	34
1.6 - 1.8	14	4.9 - 5.1	22
1.9 - 2.1	22	5.2 - 5.4	15
2.2 - 2.4	24	5.5 - 5.7	11
2.5 - 2.7	33	5.8 - 6.0	4
2.8 - 3.0	38	6.1 - 6.3	4
3.1 - 3.3	34	6.4 - 6.6	4
3.4 - 3.6	41	6.7 - 6.9	2
3.7 - 3.9	17		

[a] The California Reading Test was used as the measure of reading achievement in preliminary screening and throughout the study. In subsequent tables, data concerning reading achievement and progress were based on various forms of this instrument.

APPENDIX B

DIRECTIONS FOR ADMINISTERING H-T-P

DIRECTIONS FOR ADMINISTERING H-T-P

Directions for Drawings:

1. Pencil drawing (Provide No. 2 lead pencils.)

   Instructions:

   House: DRAW THE BEST HOUSE YOU CAN.

   Tree: DRAW THE BEST TREE YOU CAN.

   Person: DRAW THE BEST PERSON YOU CAN.

2. Chromatic drawing (Provide crayons.)

   Same instructions for chromatic drawing.

Directions for PDI. (Ask about pencil drawings.)

For the drawn Person:

1. Is that a man, a woman, a boy, or a girl?
2. How old is he (she)?
3. Who is he (she)?
4. What is he (she) doing?
5. What does that Person need most?

For the drawn Tree:

1. About how old is the tree?
2. Is that tree alive?
3. What is the weather like in the picture?

For the drawn House:

1. Would you like to own that house?
2. Who would you like to live there with you?
3. Is that a happy, friendly-looking house?

H-T-P Information

Name:________________________Sex: M F Age:_____I.Q._____

Race: W N Relevant illness:____________________________

No. of brothers:_____No. of sisters:_____Total No. of Siblings_____

Position of child: Oldest Middle Youngest Only

Mother alive: Yes No Father alive: Yes No

Child living with: Parent Other If others, whom:______________

P. D. I.

Person:

1. Is that a man, a woman, a boy, or a girl?____________________
2. How old is he (she)?____________________________________
3. Who is he (she)?______________________________________
4. What is he (she) doing?_________________________________
5. What does that person need most?__________________________

Tree:

1. About how old is the tree?_______________________________
2. Is the tree alive?_____________________________________
3. What is the weather like in the picture?____________________

House:

1. Would you like to own that house?_________________________
2. Who would you like to live there with you?__________________
3. Is that a happy, friendly-looking house?____________________

APPENDIX C

PUPIL INTEREST INTERVIEW

PUPIL INTEREST INTERVIEW

OPENING REMARKS:

As you know, we are talking to some of the members of your class. We want to find out what boys and girls are interested in and the things they like to do. Now we have some questions about what you like to do.

1. What are some of the things you like to do outside of school?

2. When you have an hour or two that you can spend just as you please, what do you like best to do?

3. What do you like to play best?

4. Do you sometimes make things? What?

5. What do you have around the house to make things with?

6. What do you have around the house to play with?

7. What games do you have at home which you like to play?

8. What do you usually do right after school? Evening? Saturdays? Sundays?

9. Do you help around the house? What?

10. Do you belong to any clubs or groups? What are they? What do you do there?

11. Do you go to Sunday School? What do you do there?

12. Do you take any special lessons outside of school? What?

13. Do you go to stores sometimes? Which ones? Do you buy things? How do you remember what to buy?

14. Ever had any jobs? Where? What doing? How much paid?

15. Do you ever go places by yourself? Where? How far? How do you go?

17. Ever been to a farm? Circus? Zoo? Museum of Art? Other museum? Amusement park? Concert? Picnic? Public Library? Camp?

18. Ever take a trip by boat? Train? Plane? Bus? Auto? Where?

19. How often do you go to the movies?
What kind of movies do you like to see?

20. If you were going to play a part in the movies, what kind of part would you like to play?

21. Suppose you had a magic lamp and you could have three wishes - you could just wish for anything at all - what would be your first wish? Second? Third?

22. What TV shows do you see? Which ones do you like best? Which ones don't you like?

23. How would you find the time for certain program if you did not know it?

24. Do you sometimes read for fun or enjoyment? What?

25. Do you read comics? What ones? Do you read the newspaper? What one? What parts like best? Do you read magazines? What ones? What like best? Do you read books? What kind do you like best?

26. Are there any books in your home? What? Are there any magazines in your home? What? Do you own any books? What? Do you own any magazines? What? Do you buy any yourself? What?

27. Do you like to have someone read to you? Who? What?

28. Ever written a letter? To whom? What about?

29. Ever answer ads? What?

30. Do you sometimes use the telephone?

31. Dial own calls?

32. If you want to call someone and don't know the number, how would you find it?

33. What are you planning to do after you grow up and leave school?

34. What does a __________ do?

35. What would your mother and father like you to do?

36. You have told me some of the things you are interested in outside of school. Now what do you do in school?

37. What are some of the things you like best in school?

38. What are some of the things you don't like?
IF READING IS NOT MENTIONED IN #37 or #38: How do you feel about reading? Is that one of the things you like or don't like?

39. Are there some things you would like to spend more time on in school?

40. Suppose you could spend more time in school on one of these things: shop (sewing), reading, arithmetic, drawing. Which one would be your first choice? Second choice? Third choice?

40a. If you had one wish, if you could do one of these things better, which one would it be?

41. Are there some things you think you spend too much time on in school? What?

42. Are there some things that you would like to do in school that you don't do? What?

43. What things are easy for you?

44. What things are hard for you?
IF READING IS NOT MENTIONED IN #43 or #44: How about reading? Is that one of the things that is easy or hard for you?

45. Do you think you read good enough to do most of the things you want to do? Explain.

51. Have you had help with your reading? Who helped you? What did you do? How did it help you?

52. If you could read (even) better, how would it help you?

53. What things could you do if you could read better?

54. What are some of the things that have happened to you because you can't read better? Did you ever feel ashamed because you couldn't read better?

55. You told me that you are thinking of being a ____________ (OR, that you haven't decided what kind of work you will do, etc. - See answer to Question 33.) Do you think that you will need to read anything as part of your job?

56. Do you think you will have to read anything in getting the job?

57. Are there any other things that you are especially interested in that we didn't ask you about?

CLOSING REMARKS will include thanking the individual and using some of the material for making the ending casual and pleasant.

Final Revision

Date________________________ Name________________________
Age________________________

PUPIL INTEREST INTERVIEW

Answer Sheet

1. Like to do:
2. Free Hr:
3. Like to play:
4. Make things: Yes No What:
5. Around house to make things:
6. Around house to play with:
7. Games at home:
8. Do after school:
    evening:
    Saturday:
    Sunday:
9. Chores: Yes No. What:
10. Clubs or groups: Yes No What: What do:
11. Sunday School: Yes No What do:
12. Special lessons: Yes No What:
13. Stores: Yes No Which ones: How identify:
    Buy things Yes No How Remember
14. Jobs: Yes No Where:
    What doing:
    How paid:
15. Go places alone: Yes No Where:
    How far:
    How:

17. Been to: (check yes)
farm
zoo
concert
public library
circus
art museum
other museum
amusement park
picnic
camp

18. Trip by: (where)
boat
train
plane
bus
auto

19. How often movies: What kind:

20. Part in movies:

21. 3 wishes:
1.
2.
3.

22. TV shows
Like Don't like
Like Don't like
Like Don't like

23. How find program:

24. Read for fun: Yes No What:

25. Comics: Yes No What: Liked best:

Newspaper: Yes No What: Parts liked:

Magazines: Yes No What: Liked best:

26. Books in home: Yes No What:

Magazines in home: Yes No What:

Own books: Yes No What:

Own magazines: Yes No What:

Buy any: Yes No What:

27. Like being read to: Yes No Who: What:

28. Write a letter: Yes No To whom: What:

29. Answer ads: Yes No What:

30. Use telephone: Yes No

31. Dial calls: Yes No

32. How find number:

33 Vocational plans:

34. What does a __________ do:

35. Parents homes:

36. Do in school:

37. Like:

38. Don't like:

Reading: Like Dislike

39. More time: Yes No What:

40. More time on: Shop (Sewing) ( ) Reading ( ) Arithmetic ( )
Drawing ( ) (Rank 1 to 4, first choice is #1)

40a. One wish:

41. Too much time: Yes No What:

42: Like but don't do: Yes No What:

43. Easy:

44. Hard:

Reading: Easy Hard

45. Reading good enough: Yes No Explain:

51. Help with reading: Yes No Who: What:

How:

52. If you could read (even) better, how would it help you?

53. Things could do:

54. Happened to you:

55. Need reading in job: Yes No What:

56. Need reading get a job: Yes No What:

57. Other Interests:

EVALUATION GUIDE

Circle rating that best describes behavior during the interview.

Cooperation:	Good	Fair	Poor
Comprehension:	Good	Fair	Poor
Attention:	Good	Fair	Poor
Self-confidence:	Good	Fair	Poor

COMMENTS: Interviewer____________________________

APPENDIX D

TEACHER INTERVIEW

TEACHER INTERVIEW

1. What are your reactions to the daily records that you kept? What effects did it have on your teaching of reading?
2. What are your reactions to the anecdotal records that you kept? What effects did they have on your teaching of reading?
3. Would you summarize for us what you feel are the main objectives of special education?
4. Suppose that you could make any changes that you wished in your program--that is, you could change anything at all within the school setting--what changes would you make?
5. Would you summarize for us what you feel are the main objectives of the teaching of reading to special classes?
6. What do you think of the whole idea of having special classes for the educable? Do you approve of the idea? Why?
7. What did you originally plan to do in education?
8. How did you get into special education?
9. What are your plans for the future?
10. What in your training has been most helpful to you?
11. What do you feel was missing in your training?

APPENDIX E

SPEECH SURVEY FORM

NEWARK STATE COLLEGE

SPEECH CLINIC

Name ______________________ Age ________ Address ________________

Date of exam ____________

I **Phonetic Analysis**

	I	M	F
p			
b			
t			
d			
k			
g			
m			
n			
ŋ			

	I	M	F
f			
v			
θ			
ð			
s			
z			
ʃ			
tʃ			
ʒ			

	I	M	F
ʒ			
l			
r			
j			
w			
hw			
h			

Test each sound in all positions; leave blank if sound is articulated correctly; use dash (--) if sound is omitted; if sound is distorted use (~); write in substituted sound.

DEFECTIVE VOWELS **DEFECTIVE BLENDS**

Examiner ______________________

APPENDIX F

FAMILY INFORMATION INTERVIEW

FAMILY INFORMATION INTERVIEW

(Ask child's name, age, and teacher's name.)

1. Do you have any brothers or sisters?

2. Tell me the names of your brothers. (check question:) Is that all of your brothers?

3. Tell me the names of your sisters (check question:) Is that all of your sisters?

4. Now tell me their ages. How old is_____? (Ask age of each brother and each sister named.)

5. Does your mother live at home with you?

   (If answer is YES, ask:) Has she always lived at home with you?

   (If answer is NO, ask:) How long since your mother lived at home? (And ask:) What happened then?

6. Does your father live at home with you?

   (If answer is YES, ask:) Has he always lived at home with you?

   (If answer is NO, ask:) How long since your father lived at home? (And ask:) What happened then?

7. (If neither parent is at home, ask:) With whom do you live?

8. What are you planning to do after you grow up and leave school? (If the answer is not a kind of work or job, ask:) What kind of work (or job) are you planning to do?

9. What does a ______ do? (Insert name of job child has mentioned.)

Name:____________________

Age:__________

Teacher:__________________

ANSWERS TO FAMILY INFORMATION INTERVIEW

1. Siblings: Yes_____ No_____

2. Names of Brothers	4. Ages	3. Names of Sisters	4. Ages
________________	____	________________	____
________________	____	________________	____
________________	____	________________	____
________________	____	________________	____
________________	____	________________	____
________________	____	________________	____

5. Mother at home:

Yes Always at home: Yes No__________

No How long away:__________ What happened:__________

6. Father at home:

Yes Always at home: Yes No__________

No How long away:__________ What happened:__________

7. Living with whom:____

8. Vocational Plans:____

9. What does a ____________________do? ___________________________

____

(Comments:) If the family situation is not covered by the questions, make note of it.

APPENDIX G

DAILY RECORD OF READING ACTIVITIES

DIRECTIONS FOR KEEPING THE DAILY RECORD OF READING ACTIVITIES

Each day a copy of the Daily Record of Reading Activities should be filled out for all activities related to reading. Keeping a record from day to day will make the task easier and the information is apt to be more accurate since it will be written while it is still fresh in your mind. If you have two or more activities and find they cannot be recorded conveniently on the same form, use as many forms as you need. Complete sentences are not necessary, just jot down your remarks informally. An explanation of the material to be filled in under each heading follows:

Date and time:	date when activities too place - time of day or length of time.
Who participated:	whole class, reading group, few individuals - names not necessary.
Materials used:	name or describe - if teacher-made or, if you have an extra copy, please attach.
Procedures:	how were the above materials used - what were the children doing.
General comments:	how did it go - what seemed to work or not to work - group responsiveness - what learnings seemed to occur or not occur - outcomes and attitudes.

DAILY RECORD OF READING ACTIVITIES

Teacher's Name: ______________________

Date and Time: ______________________

Who Participated:

Materials Used:

Procedures Used:

General Comments:

APPENDIX H

ANECDOTAL RECORD OF REACTIONS TO READING EXPERIENCES

DIRECTIONS FOR USING THE ANECDOTAL RECORD OF REACTIONS TO READING EXPERIENCES

A copy of the Anecdotal Record of Reactions to Reading Experiences is to be kept for each member of the class. The purpose of the Anecdotal Record is to collect incidents illustrating each child's reactions to reading experiences in class and his attitudes toward reading in general.

Anecdotes for each child may be listed until the page is full. A new sheet for each anecdote is not necessary. In recording an anecdote, be sure to note the date and then the incident using brief remarks. Complete sentences are not necessary. Anecdotes are most useful if they are factual and descriptive rather than interpretive.

It is suggested that two or three anecdotes be recorded each day when the Daily Record of Reading Activities is filled out. In this way, at the end of a two-week period, there should be one or two anecdotes for each child. If you find that a certain child is omitted, try to make a point of observing his reactions.

ANECDOTAL RECORD OF REACTIONS TO READING EXPERIENCES

Teacher's Name__________________________ Child's Name__________________________

DATE	INCIDENT

APPENDIX I

SAMPLES OF SUCCESSFUL AND UNSUCCESSFUL METHODS AND TECHNIQUES IN TEACHING READING

During the first half of the study, all teachers were required to keep daily records of their reading activities. At the end of the experiment they were asked to summarize those methods and techinques that they found to be successful or unsuccessful for teaching reading. Reports from teachers using the experience method were the most voluminous and varied since they attempted to integrate reading with all of the class activities. Teachers who employed the traditional approach had little to record except the design of a formal lesson plan in reading using a basal text with suggestions from the accompanying teacher's manual. Most of their records were repetitive and showed very little variety. The Semi-Experience group had the smallest number of teachers, and their reports were less detailed and definite than the other groups. They offered methods that were an attempt at being experiential but were poorly planned or outside the needs and experience of the pupils. Very few "unsuccessful" methods were recorded by any of the teachers. Representative samples taken verbatim from the teacher's reports follow.

SAMPLES OF SUCCESSFUL AND UNSUCCESSFUL METHODS AND TECHNIQUES IN TEACHING READING

Experience Methods and Techniques

Successful

1. "We have discovered that the reading activities which seemed to have been most successful were those which were meaningful to the children on their level and most closely related with concrete and everyday living experiences. These activities included: use of the telephone and directory, reading recipes, street names, bus destinations, post office activities, school notices, reading replies to invitations, writing thank-you notes, reading and sharing stories with the younger children in the school."

2. "The class organized plans for conducting a fund drive for Polio throughout the school. The pupils examined campaign materials and made a list of teachers with their room numbers and enrollment. Collections from every class in the school were made by the pupils who then counted and wrapped the money. As our means of raising money, the class decided on a sale of baked goods. The girls searched for recipes for 'baked goods' to be prepared in cooking class. They screened appropriate recipes, copied recipes, compiled market lists, and organized work and job groups. At the end of the campaign, a report was prepared to be made in assembly. The class read a letter of commendation from the principal. They read local paper releases and compared these with publicity used by the class. They wrote thank-you notes to all who helped in the campaign."

3. "A spring outing was planned. A day had to be chosen after going over the school calendar. In order to pay for the trip, the pupils made regular payments and they made a chart to keep the records straight. They wrote letters to secure information for the trip. Some of the places they wrote to were the bus company, the National Biscuit Company, the Penn Fruit Food Distributors, and the Philadelphia Zoo. They had to use the telephone directory to find the addresses."

4. "We made every happening in school and every activity into a 'reading experience.' For example, when we had a fire drill, the directions for that were written or printed on the chalkboard. When we were to go into the auditorium, the directions for marching in and the way we were to behave were made into a chart for the boys to read. Likewise, the program we saw served as the basis for another reading lesson, sometimes in the form of a story on the chalkboard and sometimes another chart."

5. "At the end of the day we tried to make each boy feel that he had gained something and had made some progress. Often at the closing of the afternoon session we would print or write a story about one of the boys and the work he was doing. This always aroused their interest. Each one enjoyed seeing his own name in a story and they read the story with pleasure and comprehension."

6. "Preparation for our monthly bulletin board. The children list their ideas on the board. Each child chooses the idea she would like to illustrate. When completed, each child shows her work and reads the idea from the board. A few even write stories to illustrate their pictures and read them to the class."

7. "The night before there had been freak weather. The class became interested in kinds of weather. They made a list of words pertaining to weather. Some asked to use dictionaries, others used the science books. This led to how we can prepare for the day's weather. This led to finding the weather forecast in the newspaper. Other interests in the paper developed."

8. "Unit on the telephone. We talked about the different kinds of calls. The class engaged in role playing. Drill on using the directory to find addresses and numbers. A chart was made on 'what to remember when making or answering a phone call.'"

9. "Each child had a copy of the local paper. The class learned to identify the name of the paper, when printed, date, cost, where to look for news, weather, etc. Other papers were brought in and class found the weather report, editorial page, sporting page, etc. We made a collage using headlines. Each child could use only those headlines and advertisements he could read."

10. "Each child had a newspaper. The teacher had flash cards which refer to the different sections of the paper like 'For Sale' or 'Help Wanted.' The teacher or a child flashes a card, each child reads it silently and then turns to the section of the paper that calls for what the card has designated."

11. "Interpretation of an advertisement. The teacher writes an advertisement taken from the paper on the board. Each child finds the ad in their own copy. Then they answer questions that are on the board. What kind of work does this ad tell about? What must the

individual know? When should she go to see about the job? Dramatize applying for a job."

12. "Filling in application blanks for jobs."

13. "Recipes. Cooking once a week. Recipe written on board the day before and difficult words and phrases were drilled. Demonstration followed. The next day children cook using the recipe. No child is permitted to cook who can not read the recipe."

14. "Learning words to school songs by using mimeograph song sheets."

15. "Object game. Each pupil working individually writes the names of one to three objects in the room for each letter of the alphabet using the dictionary for spelling."

16. "Sang the Marine's Hymn from the music book. Used the dictionary for unknown words."

17. "Once a month the Public Library delivers books to the school. All of the books are put in our class and the children are to sort them according to the book list from each teacher and deliver the books to the classes. The children are allowed to glance through the books and may make a list of the books they want to read and get them from the library."

18. "Adolescent girls are interested in 'fortunes.' There is a horoscope in the morning newspaper and each morning the girls eagerly search for their 'fortunes.'"

19. "Reading of PTA bulletins that go home."

20. "Children always read the bulletins that come from the office."

21. "We had to make a rustic bench to be used in the operetta the school was planning. How should we go about this? Answers and suggestions were put on the board. The class decided which steps should come first."

22. "At the beginning of the month the children list all that they know about the month. For example: February happenings--a winter month, shortest month, comes after January, has four weeks, names of holidays, etc."

23. "Make a drawing and then write a short story about the picture under it."

24. "Teacher often writes on the board before the children come in 'Happenings for the Day.' Sometimes this is developed by the class. Sometimes the teacher writes a short note to the class for the morning."

25. "Writing letters to a sick classmate."

26. "Reserve one board and add to it all day as things occur."

27. "Class sells valentines in their room to the rest of the school. All valentines going to individuals in the school are 'mailed' in our class that has set up a model post office. The children sort the mail and deliver it on Valentine's Day."

Unsuccessful

1. "Trying to interest group in reading any material that was in the least degree above their instructional level."

2. "Drill upon new words without use of interesting devices became meaningless and 'singsong.'"

3. "Any attempt to present a new word without fully developing its meaning."

4. "Taking for granted this group comprehended the simplest direction or the meaning and thought of the story without checking to see if each one did."

5. "Do not go over new material once or twice and expect them to know it."

6. "They do not visualize concepts, need something more concrete."

7. "Use of phonetic analysis seemed difficult."

8. "Because of lack of power to reason, I have found it most difficult for my pupils to develop reading teachniques on an individual basis which involve:

   a. evaluation--making comparisons
   b. interpretation--to determine main ideas, draw inferences, predict outcomes, form opinions, attitudes, or judgment
   c. appreciation--to determine feeling tone, understand character, sense plot and humor
   d. retain information--to recall information, retain fundamental concepts, use facts to answer questions

e. using a dictionary to discover pronunciation and meaning of words

f. understanding and using a key to pronunciation (diacritical marks)"

Semi-Experience Methods and Techniques

Successful

1. "Each boy kept a list of the words he learned and from time to time tried to find these words in other stories, in newspapers, and in magazines."

2. "Presented pictures of words listed: goal, dig, can, pond, etc. Children were to change one letter in each word to make the name of an animal. Then showed pictures of words after the change was made: goat, pig, cat, pony, etc."

3. "Each child is given a group of colored papers. What are the colors? Fill in the missing vowels: _r_ng_, r_d, bl_ _, gr_ _n."

4. "Each child was to bring a headline from the paper to class and read it. Some brought the entire article. Each had to read the headline and then tell about the article."

5. "Teacher put three words on board; children were to look up in the dictionary. Different children would read the meanings out loud. Worlds like 'tourniquet', 'Gibbon', 'Charioteer', and 'unsheathe' were used."

6. "Cut out pictures and tell simple story about the picture. For example: cut out a rocket and tell a story or information about it and space."

7. "Cut out pictures denoting various moods: happy, sad, gay, etc. Label pictures with various words indicating a knowledge of expressions."

8. "Complete an unfinished story, change ending or people in a story."

Unsuccessful

1. "Very little is gained through group work--individual direction and attention is necessary."

2. "Irregular drill gives unsuccessful results."

3. "Slower readers gained very little or nothing from oral drill."

Traditional Methods and Techniques

Successful

1. "Daily drills on word sounds, phrases, word families, and rhyming words."

2. "Word drills given immediately prior to oral reading lesson helps children to read with more speed, meaning and enjoyment. I use a drawing easel for this purpose."

3. "I sometimes read a difficult passage to the girls and then have them try it."

4. "Using the basal reader, introduce the lesson, questions and discussions, silent reading, oral reading, drill in phonics, use games from Gates and Betts, Dolch games."

Unsuccessful

1. "I have found that teaching of advanced phonics to the retarded child is out of the question. They become confused and it seems to do little good in their reading."

2. "Reading levels that are too difficult for the girls often cause stubbornness, disinterest and stuttering."

3. "Work that is not definite and calls for conclusions is almost impossible."

4. "Note taking is impossible. Ability to think about spelling and content at the same time is beyond them."

APPENDIX J

CUMULATIVE RECORD AND MEDICAL DATA FORM

CUMULATIVE RECORD AND MEDICAL DATA

Name:____________________ Teacher:____________________ Date:__________

I. Date of entrance to school_____ II. Date of entrance to sp.class____

Age of entrance to school______ Age of entrance to sp.class_____

Grade entered__________ Last full grade completed_______

From where_____________________

III. Absences

Entrance Date	Grade	Days Absent

Medical

IV. Sensory

Vision R_____ L_____ Glasses__________________________________

Other information____

____

Hearing R_____ L_____

Other information____

____

V. Physical defects, unusual illnesses, and operations:

APPENDIX K

TEACHER TRAINING AND EXPERIENCE DATA FORM

TRAINING AND EXPERIENCE OF TEACHERS OF THE EDUCABLE RETARDED

Teachers Name________________________________ Date____________________

Education beyond high school:

Institution	Dates	Specialization	Dates

List the completed courses in reading:

	Use back of sheet if necessary

List the completed courses in Special Education:

	Use back of sheet if necessary

Certification Check appropriate column

Field	Emergency	Provisional	Limited	Permanent
Elementary Education				
Secondary Education (write in)				
Major				
Minor				
Special Education				
Other (write in)				

Teaching Experience including present position:

Location	Grade and/or Subject	Dates

Other Occupational Experience:

Position	Dates

APPENDIX L

DISTRIBUTIONS OF CHRONOLOGICAL AGES, IQ'S, MENTAL AGES AND READING GRADES AMONG THE EXPERIENCE, SEMI-EXPERIENCE AND TRADITIONAL GROUPS

Table 48

Distribution of Chronological Ages Among the Experience, Semi-Experience and Traditional Groups in January 1958

N = 162

CHRONOLOGICAL AGE	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL		ALL GROUPS	
	BOYS N=24	GIRLS N=39	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=23	BOYS N=95	GIRLS N=67
11-9 to 11-11	0	0	3	0	0	0	3	0
12-0 to 12-2	0	3	0	0	0	0	0	3
12-3 to 12-5	0	4	2	2	3	0	5	6
12-6 to 12-8	0	1	2	1	2	0	4	2
12-9 to 12-11	0	13	4	2	4	1	8	16
13-0 to 13-2	0	2	3	0	2	1	5	3
13-3 to 13-5	0	6	1	0	3	0	4	6
13-6 to 13-8	2	4	6	0	5	6	13	10
13-9 to 13-11	2	0	2	0	8	3	11	3
14-0 to 14-2	2	1	1	0	1	2	4	3
14-3 to 14-5	2	2	2	0	11	3	15	5
14-6 to 14-8	0	0	1	0	4	3	5	3
14-9 to 14-11	6	1	0	0	1	2	7	3
15-0 to 15-2	4	1	0	0	0	1	4	2
15-3 to 15-5	2	1	0	0	1	0	3	1
15-6 to 15-8	3	0	0	0	0	1	3	1
16-6 to 16-8	1	0	0	0	0	0	1	0
Median	14-10	12-10	13-2	12-7	13-10	14-0	13-10	13-4

Table 49

Distribution of Stanford-Binet IQ's Among the Experience, Semi-Experience and Traditional Groups in January 1958

N = 162

IQ SCORE	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL		ALL GROUPS	
	BOYS N=24	GIRLS N=39	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=23	BOYS N=95	GIRLS N=67
50 - 52	1	1	0	0	1	0	2	1
53 - 55	2	1	2	1	0	1	4	3
56 - 58	1	1	3	1	2	1	6	3
59 - 61	4	3	2	1	3	2	9	6
62 - 64	2	4	3	1	2	0	7	5
65 - 67	3	4	6	0	5	5	14	9
68 - 70	6	11	6	1	11	7	23	19
71 - 73	3	3	3	0	11	2	17	5
74 - 76	1	8	2	0	5	3	8	11
77 - 79	1	3	0	0	4	2	5	5
Median	66	70	66	60	70	70	68	69

Table 50

Distribution of Mental Age Scores on the Stanford-Binet Among the Experience, Semi-Experience and Traditional Groups in January 1958

N = 162

MENTAL AGE	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL		ALL GROUPS	
	BOYS N=24	GIRLS N=39	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=23	BOYS N=95	GIRLS N=67
6-6 to 6-11	0	1	0	1	1	0	1	2
7-0 to 7-5	1	3	3	2	0	0	4	5
7-6 to 7-11	1	1	4	0	2	1	7	2
8-0 to 8-5	4	5	7	1	2	2	13	8
8-6 to 8-11	3	9	4	1	7	2	14	12
9-0 to 9-5	3	9	5	0	12	7	20	16
9-6 to 9-11	7	6	2	0	11	6	20	12
10-0 to 10-5	3	4	2	0	6	4	11	8
10-6 to 10-11	2	1	0	0	3	1	5	2
Median	9-5	9-0	8-3	7-5	9-4	9-4	9-1	9-1

Table 51

Distribution of Reading Grades Among the Experience, Semi-Experience and Traditional Groups in January 1958

N = 162

READING GRADE	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL		ALL GROUPS	
	BOYS N=24	GIRLS N=39	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=23	BOYS N=95	GIRLS N=67
0.0 to 0.2	0	0	1	0	0	0	1	0
0.3 to 0.5	0	0	0	0	1	0	1	0
0.6 to 0.8	2	0	0	0	0	1	2	1
0.9 to 1.1	0	0	0	0	0	0	0	0
1.2 to 1.4	0	0	0	0	0	0	0	0
1.5 to 1.7	4	0	5	0	1	0	10	0
1.8 to 2.0	3	3	4	0	4	1	11	4
2.1 to 2.3	2	2	5	0	5	0	12	2
2.4 to 2.6	2	2	3	1	6	1	11	4
2.7 to 2.9	5	4	3	0	2	0	10	4
3.0 to 3.2	1	7	2	0	7	2	10	9
3.3 to 3.5	1	5	1	0	5	2	7	7
3.6 to 3.8	1	4	0	0	4	3	5	7
3.9 to 4.1	1	2	1	2	3	4	5	8
4.2 to 4.4	2	5	0	0	2	3	4	8
4.5 to 4.7	0	0	0	0	1	3	1	3
4.8 to 5.0	0	2	1	1	1	0	2	3
5.1 to 5.3	0	1	1	0	1	2	2	3
5.4 to 5.6	0	2	0	1	1	1	1	4
Median	2.5	3.4	2.2	4.0	3.1	4.0	2.6	3.7

Table 52

Distribution of Reading Grades Among the Experience, Semi-Experience and Traditional Groups in January 1959

N = 155

READING GRADE	EXPERIENCE		SEMI-EXPERIENCE		TRADITIONAL		ALL GROUPS	
	BOYS N=24	GIRLS N=36	BOYS N=27	GIRLS N=5	BOYS N=44	GIRLS N=19	BOYS N=95	GIRLS N=60
1.5 to 1.7	2	0	1	0	0	0	3	0
1.8 to 2.0	1	1	3	0	0	1	4	2
2.1 to 2.3	5	2	5	0	2	1	12	3
2.4 to 2.6	0	0	2	1	3	0	5	1
2.7 to 2.9	4	4	5	0	5	0	14	4
3.0 to 3.2	2	4	2	0	5	0	9	4
3.3 to 3.5	3	3	3	0	5	1	11	4
3.6 to 3.8	0	1	3	1	2	0	5	2
3.9 to 4.1	2	1	0	0	1	1	3	2
4.2 to 4.4	0	3	0	0	4	2	4	5
4.5 to 4.7	1	3	0	1	3	2	4	6
4.8 to 5.0	2	3	0	0	2	1	4	4
5.1 to 5.3	0	4	0	0	4	3	4	7
5.4 to 5.6	1	3	1	2	5	4	7	9
5.7 to 5.9	0	2	0	0	1	1	1	3
6.0 to 6.2	1	2	1	0	2	1	4	3
6.3 to 6.5	0	0	1	0	0	1	1	1
Median	2.95	4.3	2.8	4.6	3.85	5.2	3.4	4.6

APPENDIX M

DISTRIBUTION OF READING SCORES IN RELATION TO EXPECTANCY MEASURED BY MENTAL AGE AND HORN INDEX

Table 53

Distribution of Reading Scores in Relation to Expectancy Measured by Mental Age and Horn Index in January 1958

N = 162

RELATION OF READING SCORE	EXPECTANCY MEASURE					
	MENTAL AGE			HORN INDEX		
	BOYS N=95	GIRLS N=67	TOTAL N=162	BOYS N=95	GIRLS N=67	TOTAL N=162
Months above expectancy						
31 - 35	0	1	1	0	0	0
26 - 30	0	0	0	0	0	0
21 - 25	1	0	1	0	0	0
16 - 20	1	5	6	0	1	1
11 - 15	0	4	4	0	0	0
6 - 10	2	3	5	1	2	3
1 - 5	15	12	27	0	4	4
At expectancy	7	2	9	0	0	0
Months below expectancy						
1 - 5	7	20	27	1	7	8
6 - 10	13	10	23	11	13	24
11 - 15	17	7	24	12	21	33
16 - 20	12	1	13	16	8	24
21 - 25	12	1	13	18	6	24
26 - 30	7	0	7	12	3	15
31 - 35	1	1	2	15	0	15
36 - 40	0	0	0	6	2	8
41 - 45	0	0	0	1	0	1
46 - 50	0	0	0	2	0	2
Median	-12	-1	-6	-22	-12	-16.5

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